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THE NIMBUS 6 DATA CATALOG

VOLUME 3

1 NOVEMBER 1975 THROUGH 31 DECEMBER 1975
DATA ORBITS 1901 THROUGH 2717

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GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

THE NIMBUS 6 DATA CATALOG .

Volume 3

1 November 1975 through 31 December 1975
Data Orbits 1901 through 2717

Prepared by

Management and Technical Services Company
Beltsville, Maryland

For the

Landsat/Nimbus Project

February 1976

GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland

FOREWORD

This is the third volume of a series of catalogs to be published by the National Aeronautics and Space Administration to document data acquired from the Nimbus 6 meteorological satellite. This volume covers the period from 1 November 1975 through 31 December 1975. Subsequent catalogs will contain documentation for succeeding periods throughout the useful lifetime of Nimbus 6.

Background information concerning the Nimbus 6 meteorological satellite system and a description of the experiments and data formats has been published separately in The Nimbus 6 User's Guide. Post-launch User's Guide information changes and corrections are included in the data catalogs. The Nimbus 6 catalogs present the type of data available, anomalies in the data, if any, and geographic location and time of the data.

The assembly and editing of this catalog was accomplished by the Management and Technical Services Company (MATSCO), Beltsville, Maryland, under contract number NAS 5-20694 with the Goddard Space Flight Center NASA, Greenbelt, Maryland.

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SECTION 1

SUMMARY OF OPERATIONS

1.1 Introduction

Nimbus 6 was successfully launched from the Western Test Range, Vandenberg Air Force Base, California at 08 hr 12 min 00 sec GMT on 12 June 1975. The orbit was nearly circular at 1093 km $\times$ 1105 km. Satellite operations from launch through 14 July (orbit 425) consisted of engineering evaluation of all spacecraft systems. As a result of that effort, data reception, accountability and processing were intermittent during that period. Therefore, Volume 1 in this catalog series mainly reflects documentation from orbit 426 (14 July) through orbit 1082 (31 August). Table 1-1 is a summary of the documentation for each Nimbus 6 Data Catalog volume.

Because the spacecraft power is limited, all experiments are not on at the same time. During this catalog period the LRIR, THIR, SCAMS, and PMR data were recorded for almost all orbits. The TWERLE was on during the daylight portions of almost all orbits and during a part of the nighttime portion of many orbits. The ERB and ESMR experiments normally split their operating time; the ERB was on for two days while the ESMR was off, followed by the ESMR being on for two days while the ERB was off. Because of instrument problems, the HIRS was only on during parts of 12 days during November and December. The T&DRE operated during parts of 15 days, with the power load adjusted when it was on. The on-off cycle for each experiment cycle for each experiment is shown in Table 2-2 in Section 2 of this catalog.

Because of an anomaly in the functioning of the High Data Range Storage subsystem (HDRSS) B, first noted during orbit 33 (14 June), HDRSS B has been limited to 65 minutes of record capability (out of a possible 120 minutes). With only HDRSS A available for full-time use, there are occasional periods when global experiment coverage is not obtained. (These occur when the Orroral, Australia STDN station is not available for playback of recorded experiment data.) The areas not covered are usually over the western part of the Pacific Ocean and/or the eastern part of the Atlantic Ocean.

Table 1-1

Nimbus 6 Catalog Documentation Summary

Volume	Dates	Orbits
1	12 June 75-31 Aug. 75	1-1082
2	1 Sept 75-31 Oct. 75	1083-1900
3	1 Nov. 75-31 Dec. 75	1901-2717

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SECTION 1

SUMMARY OF OPERATIONS

1.1 Introduction

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Subsections 1.2 through 1.10 of this catalog summarize the operational highlights of the individual experiments, present preliminary experiment results, and call attention to known data anomalies. Section 2 lists the on-off times for each experiment and provides a method for determining the geographical coverage of each experiment. Section 3 shows selected HIRS, SCAMS and ESMR images, and Section 4 presents THIR montages. Section 5 presents corrections to The Nimbus 6 User's Guide.

The user is referred to The Nimbus 6 User's Guide for a complete description of each experiment and to Section 1.7 of that Guide for the requesting procedure and sources for all data. Sections 2, 3, and 4 of this Data Catalog should help users select data to meet their needs.

1.2 The Temperature Humidity Infrared Radiometer (THIR) Subsystem

The quality of the THIR data from both channels (11.5 μm and 6.7 μm) and telemetry have been good since launch. Figure 1-1 of Typhoon June is an example of the image quality of THIR. Daily world montages of the THIR are presented in Section 4 of this catalog. All processed THIR film is archived and available through the National Space Science Data Center, as is all available THIR digital data. The THIR digital products are processed to final format only on request. Users should refer to Section 4 of this catalog, and to Sections 1.7 and 2.4 of The Nimbus 6 User's Guide for a discussion of the formats and procedure to order these products.

1.3 The High Resolution Infrared Radiation Sounder (HIRS) Experiment

Because of continuing instrument problems, the HIRS only operated for brief periods of time during this catalog period. The instrument was on for all, or part, of 11, 12, 13, 14, 18, 19, 23, and 24 November and 3, 4, 8, and 9 December (See Table 2-2 for on-off periods). Two of the instrument problems are optics contamination, which is lessened by periodic outgassing, and a higher-than-expected patch temperature. Also, the format of the bit stream from the HIRS continued to have errors, which affected at least ten percent of the data. HIRS software modifications may remove some of the effects of this problem, thereby improving the usefulness of the data.

1.4 The Scanning Microwave Spectrometer (SCAMS) Experiment*

The SCAMS instrument performance continued to be excellent during this catalog period. The only unusual instrument event was a sudden increase in the gain of channel 4 (53.85 GHz) on November 16-17, in which the gain reverted to nearly the value it had shortly after launch. Since the calibration points remained within the A-D converter range, the changing gain was corrected by the calibration program.

The SCAMS recorded an interesting meteorological episode of Typhoon June during the third week of November. This typhoon formed off the coast of New Guinea,

*Contributed by P. W. Rosenkranz and D. H. Staelin, M.I.T., Cambridge, Massachusetts

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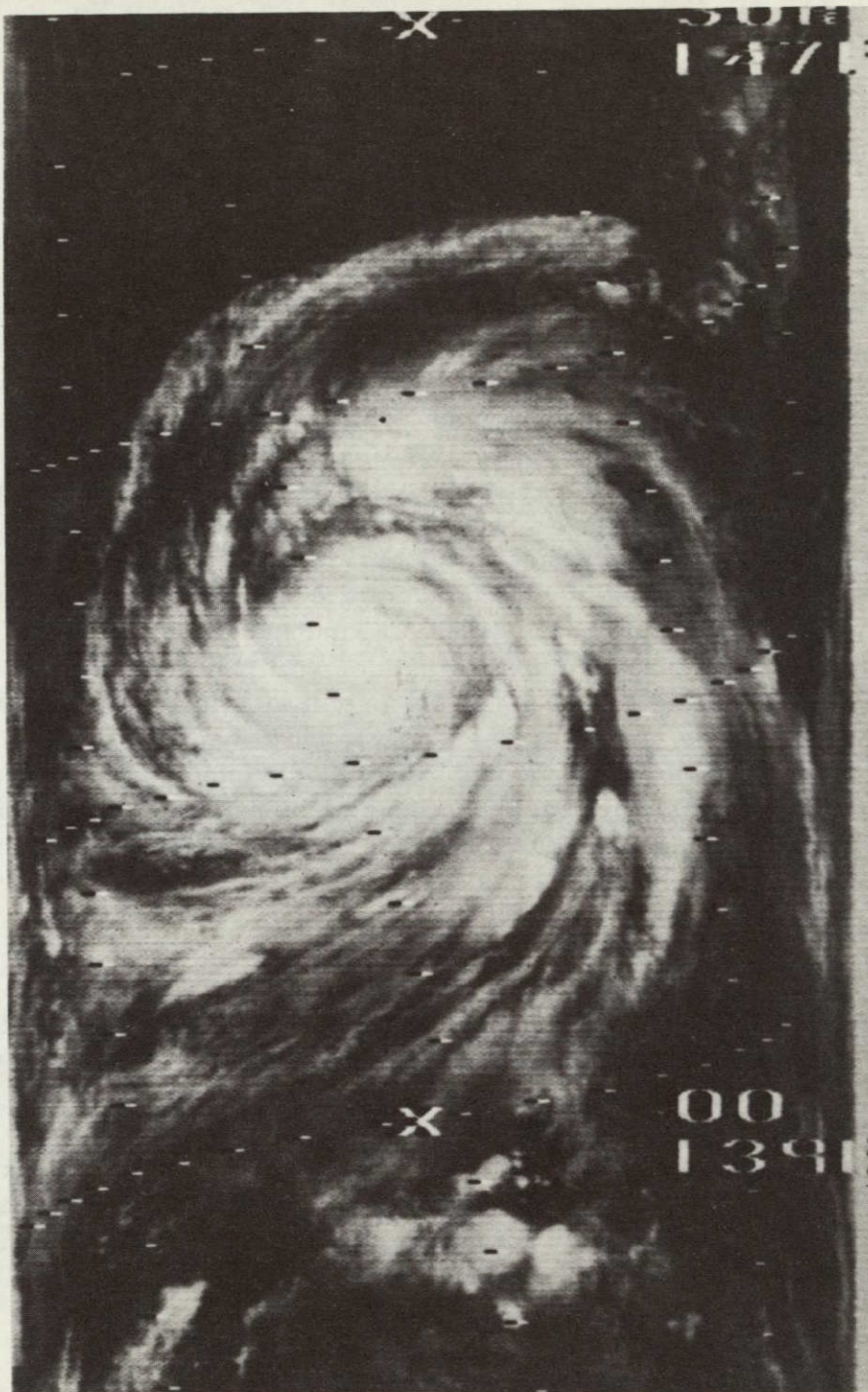


Figure 1-1. Nimbus 6 Nighttime THIR ($11.5 \mu\text{m}$ channel) Image of Typhoon June Observed near Guam on 19 November 1975. In this image the center of Typhoon June was located near 13°N , 140°E , just west of Guam. On this day June had winds of greater than 150 nautical miles per hour.

moved north through the Philippine Sea, along the east coast of Japan, and then headed into the North Pacific Ocean. Sea level pressure at the center reached 875 mb. The SCAMS image in Figure 1-2 for orbit 2177 (21 November) shows this storm during the period of maximum intensity. (The THIR image in Figure 1-1 shows June as it appeared on 19 November.) The center is located at 19°N latitude. Two regions of heavy precipitation can be seen in the liquid water image (parameter 12), although as the water vapor image (parameter 11) shows, the storm covered a great area, even wider than the 2300 km scan.

The response of the temperature sounding channels to the typhoon shows an increase in 250-100 mb mean temperature (parameter 15) in the core. This parameter is primarily determined by the 55.45 GHz brightness temperature. At this frequency clouds tend to decrease the brightness temperature, so the conclusion is that the effect represents a real upper-air warming. Similar warm cores in tropical storms have previously been observed by conventional means (Hawkins and Rubsam, 1968) and by the Nimbus 5 NEMS (Staelin *et al*, 1976). The lower-level parameters 13 and 14 exhibit dips over the core which are probably produced by the heavy clouds there, although simultaneous temperature changes may also occur.

Figure 1-3 plots the 250-100 mb temperature perturbation of the typhoon's core for orbits 2123, 2150, 2177, and 2196. The number inside each circle is the temperature difference (rounded to the nearest degree K) between the core and its surrounding. (The circle around each number only locates the storm's center and does not correspond to the area of the temperature perturbation.) Using the temperature difference as a gauge of the typhoon's strength, the intensity increased over several days, followed by a more rapid decrease of intensity. This type of remote sensing analysis may provide a unique method of monitoring the development of tropical storms.

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- Hawkins, H. F., and Rubsam, D. J.: Hurricane Hilda, 1964, II: Structure and Budgets of the Hurricane on October 1, 1964. *Monthly Weather Review*, vol. 96, 1968, pp. 617-636.
- Staelin, D. H., Kunzi, K. F., Pettyjohn, R. L., Poon, R. K. L., Wilcox, R. W., and Waters, J. W.: Remote Sensing of Atmospheric Water Vapor and Liquid Water with the Nimbus-5 Microwave Spectrometer. Submitted to *J. Appl. Meteorology*, 1976.

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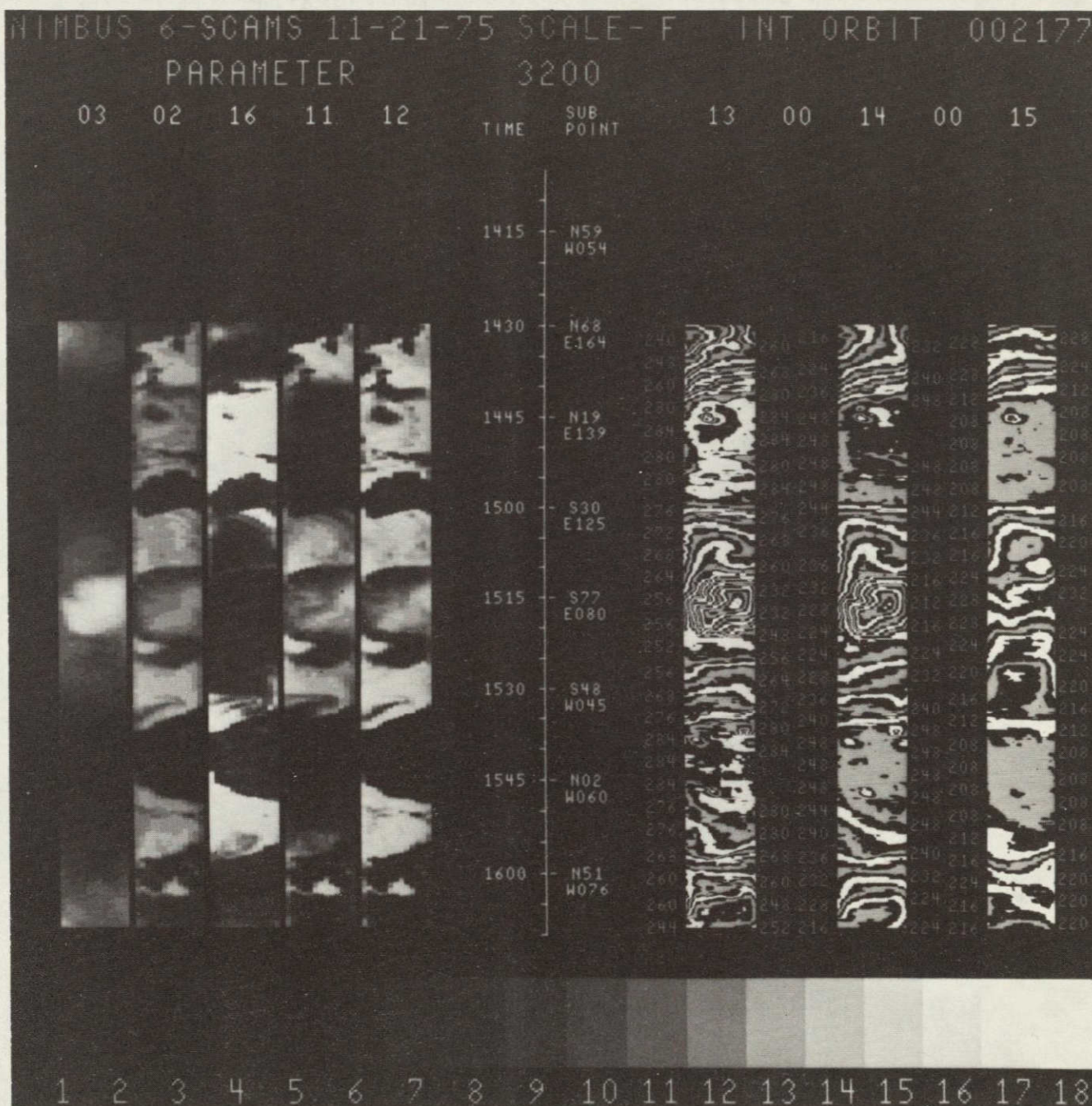


Figure 1-2. SCAMS EIS Image Display for Orbit 2177 (21 November) Showing Typhoon June at Latitude N19 and Longitude E139.

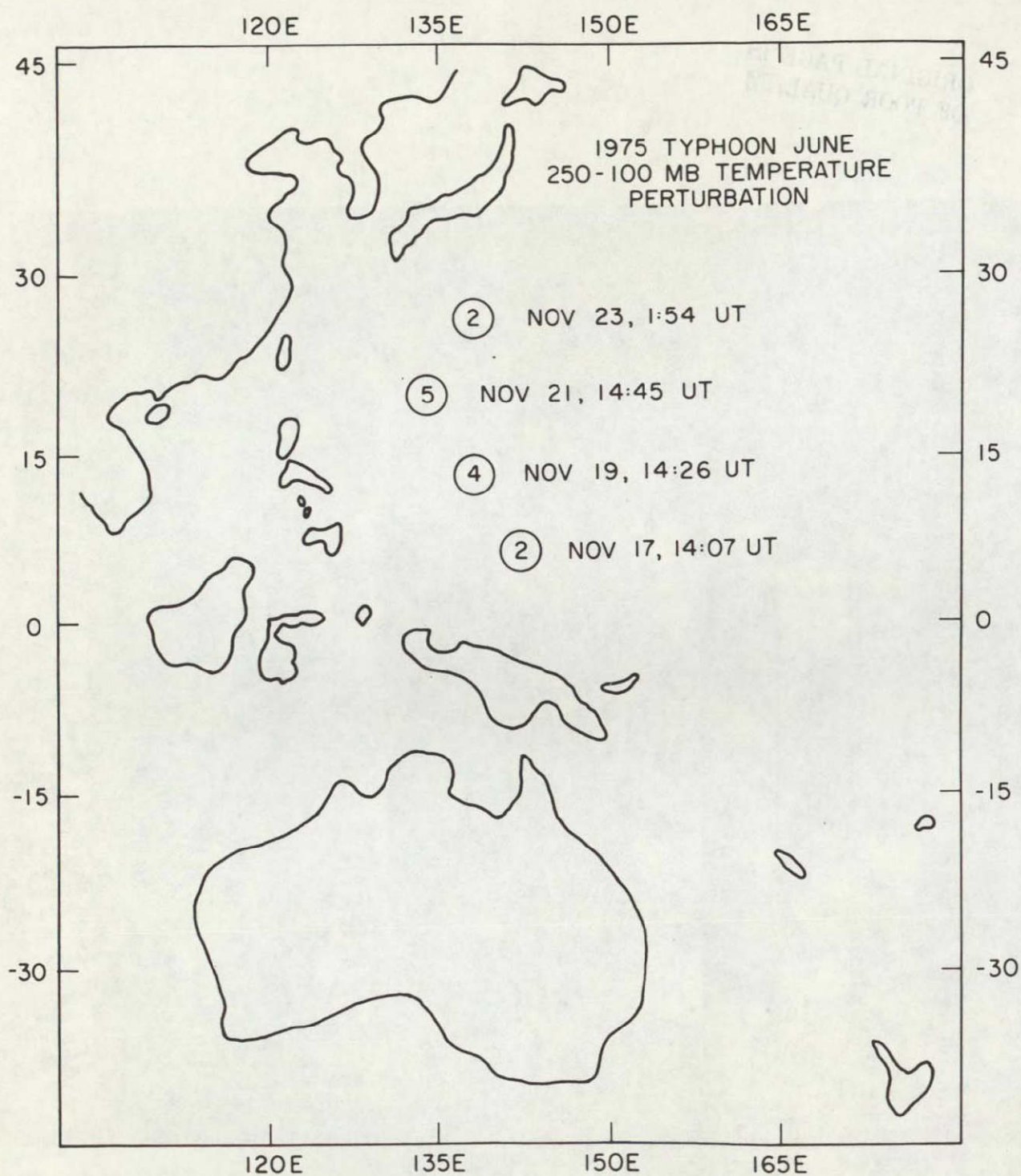


Figure 1-3. Locations between 17 and 23 November of upper-level warm Spots in the Core of Typhoon June in the Philippine Sea. The number inside each circle is the temperature difference (rounded to the nearest degree K) between the storm's core and its surrounding.

1.5 The Electrically Scanning Microwave Radiometer (ESMR) Experiment

The performance of the ESMR has been good since launch. Because of spacecraft power limitations, the normal on-off sequence for ESMR is two days on followed by two days off. Selected ESMR images for this catalog period appear in Section 3.

1.6 The Earth Radiation Budget (ERB) Experiment*

The solar and wide-angle earth-flux channels continued to operate normally, with the expected degradation occurring in several solar channels. The observations of total solar flux (0.2 to $>50\mu\text{m}$), normalized to mean sun-earth distance, remained constant to within 0.3 percent, with most of this variation explained by changes in channel temperature and viewing angle. The shuttered reference channels have shown no degradation, while one corresponding channel, solar channel 2 (0.2 to $4.0\mu\text{m}$) has degraded about 3 percent since the beginning of ERB operation in July 1975. The wide-angle earth-flux channel 12 (0.2 to $>50\mu\text{m}$) has indicated no degradation over the same period, as comparisons with the shuttered channel (11) show departures between the two channels of less than 1 watt per square meter. Table 1-2 presents a summary of monthly values of solar irradiances, the maximum deviation of each channel during each month, and the deviation from the July mean value.

The inflight calibration checks indicate no change in electronic calibration of channels 1 through 14, and no significant change in the radiometric calibration of the longwave scanning channels (19 through 22).

During this period the ERB continued to have problems with the data from the scanning channels (15 through 18). The extent of the unacceptable data varied from orbit to orbit and resulted in a rejection of almost 50 percent of the scan data during the worst orbits. About 75 percent of the rejected data corresponded to FOV's within 8° of the earth's horizon, so that in the major portion of the scan pattern, from 0° to 50° nadir angle, only about 12 percent of the data was rejected.

1.7 The Limb Radiance Inversion Radiometer (LRIR) Experiment

LRIR performance has been satisfactory. The system operated almost continuously during this period. However, continuing problems with the shaft encoder (which became serious around orbit 750) caused the loss of approximately 25 percent of the data. With this exception, the data quality is good. Limb tracking was excellent and the cooler performance was satisfactory throughout this period. The methane in the cryogenic cooler was nearly depleted by the end of December. When it is gone (sometime in January 1976) the LRIR will be turned off.

*Contributed by H. B. Howell, NESS/NOAA, Washington, D.C.

Table 1-2
ERB Solar Channel Monthly Values for 1975

Channel Number	July	August	September	October	November	December
Monthly Mean Irradiance (Wm^{-2})						
1	1369.1	1369.0	—	1371.0	1372.0	1374.1
2	1365.8	1355.7	1346.5	1337.4	1327.9	1321.7
3	1392.1	1391.7	1391.8	1392.1	1392.4	1391.1
4	969.2	967.8	966.6	964.2	961.4	960.5
5	675.9	678.9	679.2	678.8	678.2	679.1
6	205.9	205.0	203.9	202.7	201.4	200.1
7	164.7	160.7	157.1	153.9	150.7	148.1
8	109.2	107.5	105.8	103.6	101.7	99.5
9	55.06	54.56	54.0	53.6	53.0	52.5
10	24.14	24.14	24.0	23.9	23.9	23.7
Maximum Deviation of Monthly Mean Irradiance (%)						
1	± 0.1	—	—	—	—	< 0.1
2	± 0.3	± 0.2	± 0.6	± 0.4	± 0.4	± 0.4
3	± 0.03	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
4	± 0.1	± 0.2	± 0.3	± 0.2	± 0.2	± 0.2
5	± 0.4	± 0.2	± 0.3	± 0.2	± 0.2	± 0.1
6	± 0.2	± 0.2	± 0.4	± 0.3	± 0.4	± 0.2
7	± 1.0	± 0.9	± 1.4	± 0.9	± 1.1	± 0.9
8	± 0.7	± 0.8	± 1.0	± 1.3	± 1.9	± 1.0
9	± 0.4	± 0.4	± 0.1	± 0.4	± 0.6	± 0.5
10	± 0.7	± 0.9	± 0.8	± 0.6	± 0.6	± 0.5
Change from July Mean Irradiance (%)						
1		< 0.1	—	+0.12	+0.21	+0.36
2		-0.74	-1.41	-2.08	-2.77	-3.23
3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4		-0.14	-0.27	-0.52	-0.80	-0.89
5		+0.44	+0.49	+0.43	+0.34	+0.47
6		-0.43	-0.97	-1.55	-2.18	-2.82
7		-2.43	-4.61	-6.56	-8.50	-10.10
8		-1.56	-3.11	-5.13	-6.87	-8.87
9		-0.91	—	(-0.74)	(-1.85)	(-2.87)
10		< 0.1	—	(-0.42)	(-0.42)	(-1.33)

Notes: (1) Channel 1 not opened in September.

(2) The September mean value pertains to the last half of September only.

(3) Values in parentheses are changes from September value.

1.8 The Pressure Modulator Radiometer (PMR) Experiment

The PMR performance this period was satisfactory. The instrument was on continuously. Data quality was good. All acquired data was routinely transmitted from GSFC to the experimenter at Oxford, England.

During orbit 1726 (19 October), the Channel 1 scan appeared to operate between $\pm 10^\circ$ of nadir rather than the normal $\pm 15^\circ$ of nadir. Therefore, the scan mode of this channel was set in the nadir view mode during orbit 1727 (19 October), and has been left in this mode through the end of this catalog period. The data output is normal in this operation mode.

1.9 The Tropical Wind Energy Conversion and Reference Level Experiment (TWERLE)

The TWERLE continued to operate very well during this catalog period. Determinations of locations for reference platforms indicate that most are located to within ± 1.5 km of their true positions.

Section 1.9 of Data Catalog Volume 2 lists the activation of over 500 platforms. Anyone interested in results from a particular experiment should write to the principal investigator for that experiment. The full address of each experimenter is given in Table 9-2 in The Nimbus 6 User's Guide. Corrected addresses for many of these experimenters, and addresses for several new experimenters, are given in Section 5.8 of this catalog.

1.10 The Tracking and Data Relay Experiment (T&DRE)

The T&DRE performance was satisfactory during this catalog period. The T&DRE was operated on 15 different days during the orbits listed in Table 2-2 in Section 2 of this catalog. Significant accomplishments of the T&DRE are discussed in Data Catalog Volume 1, Section 1.10.

SECTION 2

THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES

This section presents the Nimbus orbital elements for selected epochs tabulates the time when each of the experiments was recording data, and gives procedures for determining the time and orbit when the satellite is over a given geographical area (and thus determining the location of coverage for each experiment).

The Nimbus 6 Brouwer Mean orbital elements for selected epochs during November and December 1975 are listed in Table 2-1.

As the elements indicate, the orbital period is slowly increasing and the satellite is moving into a slightly higher orbit. This effect has been attributed to the thrust given by the solid methane and ammonia sublimating from the LRIR solid cooler. The effect on the orbit is the opposite of that caused by atmospheric drag. The elements listed in Table 2-1 do not account for this effect. When these elements are used more than seven days from epoch, location errors of more than 60 km (about ten seconds of time), can be expected. If more accurate ephemeris are needed for a specific time period, write to the Nimbus Project, Code 430, Goddard Space Flight Center, Greenbelt, Maryland 20771. It is anticipated that this effect will continue until the beginning of 1976, at which time the methane and ammonia will be completely depleted, no longer giving a thrust to the satellite.

The data availability on-off times, listed in Table 2-2, are the times when the data from each experiment was recorded on a HDRSS and processed through the Meteorological Data Handling System (MDHS) at Goddard Space Flight Center. The Table 2-2 header labels and their meaning are as follows:

- INT ORBIT AND STDN

The satellite orbit number in progress when the satellite data is relayed to a ground station is called the interrogation orbit (INT ORBIT). The ground stations receiving the Nimbus 6 satellite data are part of the Spacecraft and Tracking Data Network (STDN). There are three STDN stations receiving Nimbus 6 experiment data: Fairbanks, Alaska (denoted by the letter "A"), Rosman, North Carolina (R), and Ororol, Australia (O).

- HDRS

The HDRS (High Data Rate Storage System-HDRSS) is the acronym for the satellite tape recorder system. Recorder "A" or "B" (or both) is played back during each STDN station interrogation.

Table 2-1

Nimbus 6 Brouwer Mean Orbital Elements for
November and December 1975

Epoch	GMT	7 Nov. 75 00 00 00	21 Nov. 75 00 00 00	8 Dec. 75 00 00 00	22 Dec. 75 00 00 00
Semi-Major Axis	Km	7480.813	7481.278	7481.847	7482.316
Eccentricity		.000750	.000775	.000807	.000848
Inclination	Degrees	99.958	99.958	99.965	99.961
Argument of Perigee	Degrees	249.455	213.769	169.211	140.333
Right Ascension of Ascending Node	Degrees	221.891	235.661	252.384	266.149
Height of Perigee	Km	1097.04	1097.32	1097.64	1097.81
Height of Apogee	Km	1108.25	1108.91	1109.72	1110.49
Anomalistic Period	Minutes	107.31999	107.33001	107.34224	107.35234
Motion of Perigee	Deg. per Day	-2.4245	-2.4240	-2.4227	-2.4225

- HDRS TIME ON-OFF

The HDRSS ON and OFF times are given in GMT to the nearest minute. The ON time is the time the (A or B) HDRSS begins recording experiment measurements; the OFF time is when it stops recording. Usually, the ON and OFF times occurs when the satellite is within acquisition range of one of the three STDN stations. The time span between each ON and OFF usually covers part of two DATA ORBITS.

- LRIR, THIR, TDRE, SCAM, ERB, PMR, TWRL, HIRS

These are the acronyms for each of the experiments on Nimbus 6. (Acronyms longer than four letters have been shortened.) The column beneath each acronym contains a series of "X's" or "blanks." Each "X" in the column indicates that the data for that experiment was processed at GSFC. A "blank" usually indicates that the experiment was turned off for the HDRSS ON-OFF time in that line. A single "blank" in the middle of a series of "X's" frequently means that the experiment was on during that time span but the data has not been processed, or is unavailable for any of several reasons.

- DATA ORBIT

A DATA ORBIT begins when the satellite crosses the equator heading in a northbound direction, and ends after the satellite has circled the earth and is about to cross the equator heading in a northbound direction. The DATA ORBIT number increases by one with each successive northbound equator crossing. The ASCENDING NODE and DESCENDING NODE information is referenced to the DATA ORBIT number.

- ASCENDING NODE TIME (and) LONG

The ASCENDING NODE is the point in the orbit when the satellite crosses the equator heading in a northbound direction. The TIME of ASCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of ASCENDING NODE is given to the nearest tenth of a degree of east (E) or west (W) longitude. For Nimbus 6, the ascending node crossings always occur during the daytime portion of the orbit at approximately 11:45 a. m. local time.

- DESCENDING NODE TIME (and) LONG

The DESCENDING NODE is the point within a DATA ORBIT when the satellite crosses the equator heading in a southbound direction. The TIME of DESCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of DESCENDING NODE is given to the nearest degree of east (E) or west (W) longitude. The descending node crossings always occur during the nighttime portion of each orbit at approximately 11:45 p. m. local time.

Table 2-2 together with the World Map (Figure 2-1) and the vellum Subsattellite Tracks Overlay attached to the back of this catalog, can be used to determine approximate geographic coverages and times for experiment data that the user may wish to order. The Overlay contains 14 correctly spaced satellite subpoint tracks, which end at the approximate earth day-to-night transitions. The tracks contain time ticks spaced 5 minutes apart, approximately annotated at the edge of the overlay and referenced to the equator.

A Subsattellite Tracks Overlay is correctly oriented with the World Map when the ascending or descending node line (equator) on the overlay coincides with the 0-degree latitude line (equator) of the World Map.

Orbital coverage for all orbits on any day is then determined by placing one of the orbit tracks on the overlay at its appropriate ascending node (for daytime data) or descending node (for nighttime data) longitude. (The nodes for each day are listed in Table 2-2.) The orbit track (or tracks) which covers the area of interest is readily apparent.

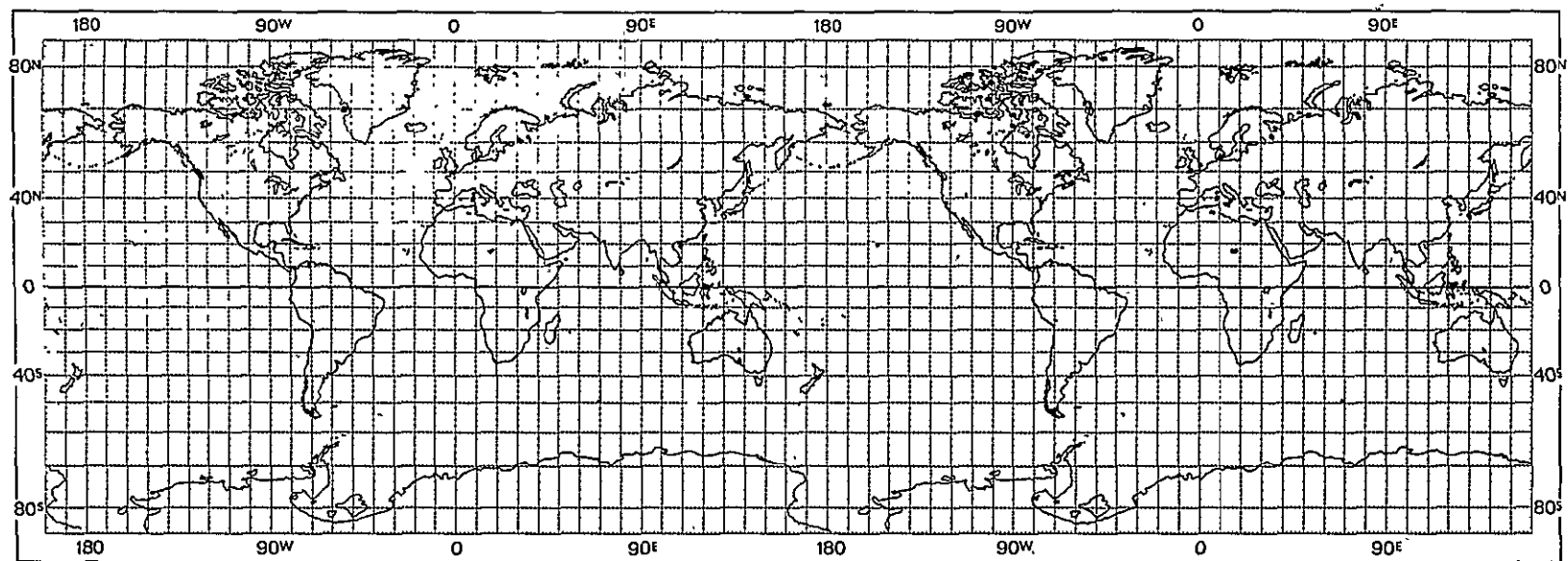


Figure 2-1. World Map

The time (GMT) of satellite passage over an area of interest is calculated by adding or subtracting the minutes from equator crossing (as determined from the overlay) to the appropriate node time (derived from Table 2-2). For daytime orbits, time is added to the ascending node for areas north of the equator, and subtracted from the ascending node for areas south of the equator. For nighttime orbits, time is subtracted from the descending node for areas north of the equator, and added to the descending node for areas south of the equator.

To determine if an experiment was ON during the calculated orbit and time of interest, the user must first "fit" the calculated time into the correct ON-OFF interval of an interrogation orbit listed in Table 2-2. Then the user must check the appropriate experiment column for that line. If an "X" is in the column, the experiment was on and the data has been processed. If the column is "blank", the experiment was off (or the data was not processed) and no data for that orbit is available.

An alternate method of determining geographic coverage and time of data is to use the method described in Section 4. The THIR montages and the vellum Location Guides (attached in the back of this catalog) are used to locate the geographical coverage of each orbit of THIR. The data coverage from other experiments will be within the limits of each THIR swath. The TIME of coverage over a particular area is obtained by using Table 4-1 and adding or subtracting this computed time to the appropriate ascending or descending node time given in Table 2-2.

Each request for data should contain, as a minimum, the name of the experiment for which data is requested, the calendar date of the data, the orbit, the time (GMT) interval of the data needed, and the geographic limits of the area of interest. The procedures described above will provide this information.

The nature and format of the data available from each experiment are explained in detail in the respective sections of The Nimbus 6 User's Guide. The appropriate sources for requesting the various data types are listed in Section 1.7 of the same manual.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
1 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
19010	A	0124 0302				X X		X X		1901	013240 E153.2	022622 W040.3
1902R	B	0302 0402	X X			X X		X X		1902	032006 E126.3	041348 W067.1
1903R	A	0400 0547	X X			X X		X X		1903	050731 E099.4	060113 W094.0
1904A	A	0551 0727	X X			X X		X X		1904	065457 E072.6	074839 W120.9
1905A	A	0732 0911	X X			X X		X X		1905	084223 E045.7	093605 W147.7
1906A	A	0916 1059	X X			X X		X X		1906	102948 E018.9	112330 W174.6
1907A	A	1104 1245	X X			X X		X X		1907	121714 E008.0	131056 E158.6
1908A	A	1250 1435	X X			X X	X X	X X		1908	140440 W034.9	145821 E131.7
1909A	A	1439 1618	X X			X	X X	X X		1909	155205 W061.7	164547 E104.9
1910A	A	1622 1759	X X			X	X X	X X		1910	173931 W088.6	183313 E078.0
1911A	A	1803 1943	X X			X	X X	X X		1911	192657 W115.4	202038 E051.2
1912A	A	1947 2132	X X			X	X X	X X		1912	211422 W142.3	220804 E024.3
1913A	A	2136 2319	X X			X	X X	X X		1913	230148 W169.1	235530 W002.6
19130	B	2317 0010				X		X X	X			

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
2 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
19140	A	0020 0218				X		X X	X	1914	004914 E164.0	014255 W029.4
1916R	A	0226 0411	X X			X		X X	X	1915	023639 E137.2	033021 W056.3
1916R	B	0410 0506	X X			X		X X	X	1916	042405 E110.3	051747 W083.1
1917R	A	0507 0650	X X			X		X X	X	1917	061131 E083.4	070512 W110.0
1918A	A	0654 0830	X X			X		X X	X	1918	075856 E056.6	085238 W136.9
1919A	A	0834 1017	X X			X		X X	X	1919	094622 E029.7	104004 W163.7
1920A	A	1021 1204	X X			X		X X	X	1920	113348 E002.9	122729 E169.4
1921A	A	1208 1350	X X			X		X X	X	1921	132113 W024.0	141455 E142.6
1922A	A	1355 1533	X X			X		X X	X	1922	150839 W050.9	160221 E115.7
1923A	A	1537 1717	X X			X		X X	X	1923	165605 W077.7	174946 E088.9
1924A	A	1721 1903	X X			X		X X	X	1924	184330 W104.6	193712 E062.0
1925A	A	1908 2048	X X			X		X X	X	1925	203056 W131.4	212438 E035.2
1926A	A	2053 2236	X X			X		X X	X	1926	221822 W158.3	231204 E008.3
19270	B	2233 2336				X		X X	X			

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TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
3 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
19270	A	2336 0134					X	X	X	X		1927	000547 E174.9	005929 W018.6
19280	A	0143 0323					X	X	X	X		1928	015313 E148.0	024655 W045.4
1929R	B	0323 0423	X	X			X	X	X	X		1929	034039 E121.2	043421 W072.3
1930R	A	0421 0607	X	X			X	X	X	X		1930	052805 E094.3	062146 W099.1
1931A	A	0611 0748	X	X			X	X	X	X		1931	071530 E067.4	080912 W126.0
1932A	A	0752 0934	X	X			X	X	X	X		1932	090256 E040.6	095638 W152.9
1933A	A	0938 1120	X	X			X	X	X	X		1933	105022 E013.7	114404 W179.7
1934A	A	1124 1307	X	X			X	X	X	X		1934	123747 W013.1	133129 E153.4
1935A	A	1312 1453	X	X			X	X	X	X		1935	142513 W040.0	151855 E126.6
1936A	A	1458 1637	X	X			X	X	X	X		1936	161239 W066.9	170621 E099.7
1937A	A	1642 1822	X	X			X	X	X	X		1937	180005 W093.7	185346 E072.9
1938A	A	1826 2005	X	X			X	X	X	X		1938	194730 W120.6	204112 E046.0
1939A	A	2009 2153	X	X			X	X	X	X		1939	213456 W147.4	222838 E019.2
1940A	A	2157 2339	X	X			X	X	X	X		1940	232222 W174.3	001604 W007.7
19400	B	2338 0041					X	X	X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
4 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
19410	A	0041 0239					X	X	X	X		1941	010948 E158.9	020329 W034.6
1943R	A	0247 0431	X	X			X	X	X	X		1942	025713 E132.0	035055 W061.4
1943R	B	0430 0528	X	X			X	X	X	X		1943	044440 E105.2	053821 W088.3
0944A	A	0528 0710	X	X			X	X	X	X		1944	063205 E078.3	072547 W115.1
1945A	A	0715 0851	X	X			X	X	X	X		1945	081931 E051.4	091313 W142.0
1946A	A	0859 1037	X	X			X	X	X	X		1946	100657 E024.6	110039 W168.9
1947A	A	1041 1224	X	X			X	X	X	X		1947	115423 W002.3	124804 E164.3
1948A	A	1228 1411	X	X			X	X	X	X		1948	134148 W029.1	143530 E137.4
1949A	A	1415 1555	X	X			X	X	X	X		1949	152914 W056.0	162256 E110.6
1950A	A	1559 1739	X	X			X	X	X	X		1950	171640 W082.9	181022 E083.7
1951A	A	1743 1922	X	X			X	X	X	X		1951	190406 W109.7	195747 E056.9
1952A	A	1926 2110	X	X			X	X	X	X		1952	205131 W136.6	214513 E030.0
1953A	A	2114 2257	X	X			X	X	X	X		1953	223857 W163.4	233239 E003.2
19540	B	2253 2356					X	X	X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
5 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF		L R	T R	T R	S E	E P	T H		ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG		
	S	HRMN	HRMN	R	R	E	M	R	B	R	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
19540	A	2356	0154				X	X		X	1954	002623	E169.7	012005	W023.7
19550	A	0204	0343				X	X		X	1955	021349	E142.9	030731	W050.6
1956R	B	0346	0442	X	X		X	X		X	1956	040115	E116.0	045456	W077.4
1957R	A	0440	0628	X	X		X	X		X	1957	054840	E089.2	064222	W104.3
1958A	A	0632	0805	X	X		X	X		X	1958	073606	E062.3	082948	W131.1
1959A	A	0814	0955	X	X		X	X		X	1959	092332	E035.4	101714	W158.0
1960A	A	0959	1140	X	X		X	X		X	1960	111058	E008.6	120440	E175.2
1961A	A	1144	1327	X	X		X	X		X	1961	125824	W018.3	135205	E148.3
1962A	A	1331	1509	X	X		X	X		X	1962	144549	W045.1	153931	E121.4
1963A	A	1513	1657	X	X		X		X	X	1963	163315	W072.0	172657	E094.6
1964A	A	1701	1842	X	X		X		X	X	1964	182041	W098.9	191423	E067.7
1965A	A	1846	2027	X	X		X		X	X	1965	200907	W125.7	210149	E040.9
1966A	A	2031	2214	X	X		X		X	X	1966	215533	W152.6	224915	E014.0
19670	B	2210	2314				X		X	X	1967	234259	W179.4	003640	W012.9
19670	A	2313	0111				X		X	X					

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
6 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF		L R	T R	T R	S E	E P	T H		ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG		
	S	HRMN	HRMN	R	R	E	M	R	B	R	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
19680	A	0120	0300				X		X	X	1968	013024	E153.7	022406	W039.7
1969R	B	0301	0401	X	X		X		X	X	1969	031750	E126.9	041132	W066.6
1970R	A	0400	0543	X	X		X		X	X	1970	050516	E100.0	055858	W093.4
1971A	A	0547	0727	X	X		X		X	X	1971	065242	E073.1	074624	W120.3
1972A	A	0730	0910	X	X		X		X	X	1972	084007	E046.3	093350	W147.1
1973A	A	0915	1057	X	X		X		X	X	1973	102734	E019.4	112115	W174.0
1974A	A	1101	1244	X	X		X		X	X	1974	121459	W007.4	130841	E159.2
1975A	A	1248	1429	X	X		X		X	X	1975	140225	W034.3	145607	E132.3
1976A	A	1433	1614	X	X	X	X		X	X	1976	154951	W061.2	164333	E105.4
1977A	A	1619	1756	X	X	X	X		X	X	1977	173717	W038.0	183059	E078.6
1978A	A	1800	1941	X	X	X	X		X	X	1978	192443	W114.9	201825	E051.7
1979A	A	1945	2134	X	X	X	X		X	X	1979	211209	W141.7	220550	E024.9
1980A	A	2139	2317	X	X		X		X	X	1980	225935	W168.6	235316	W002.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
7 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P E	W P	I I	T H	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
1983R	A	0203 0402	X	X		X	X	X	X			1981	004700 E164.6	014042 W028.9
1983R	B	0402 0506	X	X		X	X	X	X			1982	023426 E137.7	032808 W055.7
1984R	A	0505 0647	X	X		X	X	X	X			1983	042152 E110.9	051534 W082.6
1985A	A	0656 0828	X	X		X	X	X	X			1984	060918 E084.0	070300 W109.4
1986A	A	0832 1015	X	X		X	X	X	X			1985	075644 E057.1	085026 W136.3
1987A	A	1023 1203	X	X		X	X	X	X			1986	094410 E030.3	103752 W163.2
1988A	A	1207 1347	X	X		X	X	X	X			1987	113136 E003.4	122518 E170.0
1989A	A	1351 1532	X	X		X	X	X	X			1988	131902 W023.4	141243 E143.1
1990A	A	1537 1716	X	X		X	X		X	X		1989	150628 W050.3	160009 E116.3
1991A	A	1720 1900	X	X		X	X		X	X		1990	165353 W077.2	174735 E089.4
1992A	A	1904 2046	X	X		X	X		X	X		1991	184119 W104.0	193501 E062.6
1993A	A	2050 2231	X	X		X	X		X	X		1992	202845 W130.9	212227 E035.7
19940	B	2230 2333				X	X		X	X		1993	221611 W157.7	230953 E008.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
8 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P E	W P	I I	T H	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
19940	A	2333 0131				X	X		X	X		1994	000337 E175.4	005719 W018.0
1996R	A	0142 0322	X	X		X	X		X	X		1995	015103 E148.6	024445 W044.9
1996R	B	0320 0420	X	X		X	X		X	X		1996	033829 E121.7	043211 W071.7
1997R	A	0423 0605	X	X		X	X		X	X		1997	052555 E094.8	061937 W098.6
1998A	A	0609 0745	X	X		X	X		X	X		1998	071321 E068.0	080702 W125.5
1999A	A	0749 0931	X	X		X	X		X	X		1999	090047 E041.1	095428 W152.3
2000A	A	0935 1117	X	X		X	X		X	X		2000	104812 E014.3	114154 W179.2
2001A	A	1121 1303	X	X		X	X		X	X		2001	123539 W012.6	132920 E154.0
2002A	A	1308 1449	X	X		X	X		X	X		2002	142304 W039.5	151646 E127.1
2003A	A	1453 1635	X	X		X	X		X	X		2003	161030 W066.3	170412 E100.3
2004A	A	1639 1818	X	X		X	X		X	X		2004	175756 W093.2	185138 E073.4
2005A	A	1822 2003	X	X		X	X		X	X		2005	194522 W120.0	203904 E046.6
2006A	A	2007 2148	X	X		X	X		X	X		2006	213248 W146.9	222630 E019.7
2007A	A	2152 2336	X	X		X	X		X	X		2007	232014 W173.7	001356 W007.2
20070	B	2336 0039				X	X		X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
9 NOVEMBER 1975

INT	H	HDRSS	L	T	T	S	E	T	H		ASCENDING	DESCENDING
ORBIT	D	TIME	R	H	D	C	S	E	P	W	NODE	NODE
AND	R	ON OFF	I	I	R	A	M	R	M	R	TIME	TIME
STDN	S	HRMN HRMN	R	R	E	M	R	B	R	L	HRMNSS DEGREE	HRMNSS DEGREE
2010R	A	0222 0420	X	X		X	X		X	X	2008 010740 E159.4	020122 W034.0
2010R	B	0420 0524	X	X		X	X		X	X	2009 025506 E132.5	034848 W050.9
2011R	A	0526 0708	X	X		X	X		X	X	2010 044232 E105.7	053614 W087.7
2012A	A	0712 0850	X	X		X	X		X	X	2011 062958 E078.8	072340 W114.6
2013A	A	0854 1035	X	X		X	X		X	X	2012 081724 E052.0	091106 W141.5
2014A	A	1039 1224	X	X		X	X		X	X	2013 100450 E025.1	105832 W158.3
2015A	A	1228 1408	X	X		X	X		X	X	2014 115216 W001.8	124558 E164.8
2016A	A	1412 1550	X	X		X	X		X	X	2015 133942 W028.6	143324 E138.0
2017A	A	1554 1737	X	X		X		X	X	X	2016 152708 W055.5	162050 E111.1
2018A	A	1741 1919	X	X		X		X	X	X	2017 171434 W082.3	180816 E084.3
2019A	A	1923 2105	X	X		X		X	X	X	2018 190200 W109.2	195542 E057.4
2020A	A	2110 2252	X	X		X		X	X	X	2019 204926 W136.0	214308 E030.5
											2020 223652 W162.9	233034 E003.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
10 NOVEMBER 1975

INT	H	HDRSS	L	T	T	S	E	T	H		ASCENDING	DESCENDING
ORBIT	D	TIME	R	H	D	C	S	E	P	W	NODE	NODE
AND	R	ON OFF	I	I	R	A	M	R	M	R	TIME	TIME
STDN	S	HRMN HRMN	R	R	E	M	R	B	R	L	HRMNSS DEGREE	HRMNSS DEGREE
20220	B	0002 0105				X		X	X	X	2021 002418 E170.2	011800 W023.2
2023R	A	0159 0342	X	X		X		X	X	X	2022 021144 E143.4	030526 W050.0
2023R	B	0348 0442	X	X		X		X	X	X	2023 035910 E116.5	045252 W076.9
2024R	A	0444 0627	X	X		X		X	X	X	2024 054636 E089.7	064018 W103.8
2025A	A	0631 0808	X	X		X		X	X	X	2025 073402 E062.8	082744 W130.6
2026A	A	0812 0952	X	X		X		X	X	X	2026 092128 E036.0	101510 W157.5
2027A	A	0956 1138	X	X		X		X	X	X	2027 110854 E009.1	120236 E175.7
2028A	A	1142 1324	X	X		X		X	X	X	2028 125620 W017.8	135002 E148.8
2029A	A	1329 1509	X	X		X		X	X	X	2029 144346 W044.6	153728 E122.0
2030A	A	1513 1654	X	X		X		X	X	X	2030 163112 W071.5	172454 E095.1
2031A	A	1658 1838	X	X		X		X	X	X	2031 181838 W098.3	191220 E068.2
2032A	A	1842 2026	X	X		X		X	X	X	2032 200604 W125.2	205946 E041.4
2033A	A	2030 2210	X	X		X		X	X	X	2033 215330 W152.1	224712 E014.5
											2034 234056 W178.9	003438 W012.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
11 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I B	T H	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S			HRMNSS DEGREE	HRMNSS DEGREE
2037R	A	0243 0442	X	X		X	X	X	X				2035	012822 E154.2	022204 W039.2
2037R	B	0442 0546	X	X		X	X	X	X				2036	031548 E127.4	040930 W066.1
2038A	A	0547 0723	X	X		X	X	X	X				2037	050322 E100.5	055704 W093.0
2039A	A	0727 0910	X	X		X	X	X	X				2038	065048 E073.6	074430 W119.8
2040A	A	0915 1058	X	X		X	X	X	X				2039	083815 E046.7	093156 W146.7
2041A	A	1102 1244	X	X		X	X	X	X				2040	102541 E019.9	111922 W173.6
2042A	A	1248 1428	X	X		X	X	X	X				2041	121307 E007.0	130648 W159.6
2043A	A	1432 1615	X	X	X	X	X	X	X	X			2042	140033 W033.8	145414 E132.8
2044A	A	1620 1754	X	X	X	X	X	X	X				2043	154759 W060.7	164141 E105.9
2045A	A	1758 1945	X	X	X	X	X	X	X				2044	173525 W087.6	182907 E079.0
2046A	A	1950 2130	X	X	X	X	X	X	X				2045	192251 W114.4	201633 E052.2
2047A	A	2134 2315	X	X		X	X	X	X				2046	211017 W141.3	220359 E025.3
													2047	225743 W168.1	235125 W001.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
12 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I B	T H	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S			HRMNSS DEGREE	HRMNSS DEGREE
2050R	A	0208 0407	X	X		X	X	X	X				2048	004510 E165.0	013851 W028.4
2050R	B	0406 0504	X	X		X	X	X	X				2049	023236 E138.2	032617 W055.3
2051R	A	0504 0645	X	X		X	X	X	X				2050	042002 E111.3	051343 W082.1
2052A	A	0649 0827	X	X		X	X	X	X				2051	060728 E084.4	070109 W109.0
2053A	A	0831 1012	X	X		X	X	X	X				2052	075454 E057.6	084836 W135.9
2054A	A	1016 1159	X	X		X	X	X	X				2053	094220 E030.7	103602 W162.7
2055A	A	1203 1346	X	X		X	X	X	X				2054	112946 E003.9	122328 E170.4
2056A	A	1350 1528	X	X		X	X	X	X				2055	131712 W023.0	141054 E143.6
2057A	A	1532 1716	X	X		X	X	X	X	X			2056	150438 W049.9	155820 E116.7
2058A	A	1720 1857	X	X		X	X	X	X				2057	165205 W076.7	174546 E089.9
2059A	A	1901 2043	X	X		X	X	X	X				2058	183931 W103.6	193312 E063.0
2060A	A	2047 2230	X	X		X	X	X	X				2059	202657 W130.4	212039 E036.1
20610	B	2228 2331				X	X	X	X				2060	221423 W157.3	230805 E009.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
13 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P M	W R	I B	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S				HRMNSS DEGREE	HRMNSS DEGREE
20610	A	2332 0130				X X	X X				2061	000149 E175.8	005531 W017.6
20620	A	0139 0320				X X	X X	X X			2062	014915 E149.0	024257 W044.4
2063R	B	0319 0419	X			X X	X X	X X			2063	033642 E122.1	043023 W071.3
2064R	A	0417 0606	X			X X	X X	X X			2064	052408 E095.3	061749 W098.2
2065A	A	0610 0743	X			X X	X X	X X			2065	071134 E068.4	080516 W125.0
2066A	A	0747 0932	X			X X	X X	X X			2066	085900 E041.6	095242 W151.9
2067A	A	0936 1118	X			X X	X X	X X			2067	104626 E014.7	114008 W178.7
2068A	A	1123 1304	X			X X	X X	X X			2068	123353 W012.1	132734 E154.4
2069A	A	1309 1450	X X			X X	X X	X X			2069	142119 W039.0	151500 E127.6
2070A	A	1454 1633	X X	X X		X X	X X	X X			2070	160845 W065.9	170226 E100.7
2071A	A	1637 1815	X X	X X		X X	X X	X X			2071	175611 W092.7	184953 E073.8
2072A	A	1819 2000	X X	X X		X X	X X	X			2072	194337 W119.6	203719 E047.0
2073A	A	2004 2150	X X			X X	X X	X X			2073	213103 W146.4	222445 E020.1
2074A	A	2154 2338	X X			X X	X X	X X			2074	231830 W173.3	001211 W006.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
14 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P M	W R	I B	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S				HRMNSS DEGREE	HRMNSS DEGREE
2077R	A	0326 0524	X X			X X	X X	X X			2075	010556 E159.8	015937 W033.6
2078R	A	0530 0708	X X			X X	X X	X X			2076	025322 E133.0	034704 W060.4
2079A	A	0712 0851	X X			X X	X X	X X			2077	044048 E106.1	053430 W087.3
2080A	A	0855 1032	X X			X X	X X	X X			2078	062814 E079.3	072156 W114.2
2081A	A	1036 1221	X X			X X	X X	X X			2079	081541 E052.4	090922 W141.0
2082A	A	1225 1404	X X			X X	X X	X X			2080	100307 E025.5	105648 W167.9
2083A	A	1408 1548	X X			X X	X X	X X			2081	115033 W001.3	124415 E165.3
2084A	A	1552 1736	X X			X X	X X	X X			2082	133759 W028.2	143141 E138.4
2085A	A	1740 1918	X X			X X	X X	X X			2083	152526 W055.0	161907 E111.5
2086A	A	1922 2103	X X			X X	X X	X X			2084	171252 W081.9	180633 E084.7
2087A	A	2108 2252	X X			X X	X X	X X			2085	190018 W108.8	195400 E057.8
											2086	204744 W135.6	214126 E031.0
											2087	223511 W162.5	232852 E004.1

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
15 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
20890	B	2359 0102				X	X	X	X	2088	002237 E170.7	011618 W022.8
20890	A	0140 0338				X	X	X	X	2089	021003 E143.8	030345 W049.6
2090R	B	0344 0439	X	X		X	X	X	X	2090	035729 E117.0	045111 W076.5
2091R	A	0437 0620	X	X		X	X	X	X	2091	054456 E090.1	063837 W103.3
2092A	A	0629 0806	X	X		X	X	X	X	2092	073222 E063.2	082603 W130.2
2093A	A	0810 0951	X	X		X	X	X	X	2093	091948 E036.4	101330 W157.1
2094A	A	0955 1137	X	X		X	X	X	X	2094	110714 E009.5	120056 E176.1
2095A	A	1141 1326	X	X		X	X	X	X	2095	125441 W017.4	134822 E149.2
2096A	A	1330 1513	X	X		X	X	X	X	2096	144207 W044.2	153548 E122.4
2097A	A	1517 1654	X	X		X	X	X	X	2097	162933 W071.1	172315 E095.5
2098A	A	1658 1835	X	X		X	X	X	X	2098	181659 W097.9	191041 E068.7
2099A	A	1839 2021	X	X		X	X	X	X	2099	200426 W124.8	205807 E041.8
2100A	A	2025 2209	X	X		X	X	X	X	2100	215152 W151.6	224533 E014.9
2101A	A	2213 2357	X	X		X	X	X	X	2101	233918 W178.5	003300 W011.9
21010	B	2356 0059				X	X	X	X			

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
16 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
2103R	A	0059 0258	X	X		X	X	X	X	2102	012645 E154.6	022026 W038.8
2104R	B	0256 0400	X	X		X	X	X	X	2103	031411 E127.8	040752 W065.6
2104R	A	0400 0539	X	X		X	X	X	X	2104	050137 E100.9	055519 W092.5
2105A	A	0543 0722	X	X		X	X	X	X	2105	064903 E074.1	074245 W119.4
2106A	A	0726 0909	X	X		X	X	X	X	2106	083630 E047.2	093011 W146.2
2107A	A	0913 1054	X	X		X	X	X	X	2107	102356 E020.3	111737 W173.1
2108A	A	1058 1242	X	X		X	X	X	X	2108	121122 W006.5	130504 E160.1
2109A	A	1246 1425	X	X		X	X	X	X	2109	135849 W033.4	145230 E133.2
2110A	A	1429 1606	X	X		X	X	X	X	2110	154615 W060.2	163956 E106.3
2111A	A	1611 1754	X	X		X	X	X	X	2111	173341 W087.1	182723 E079.5
2112A	A	1758 1939	X	X		X	X	X	X	2112	192108 W114.0	201449 E052.6
2113A	A	1943 2126	X	X		X	X	X	X	2113	210834 W140.9	220215 E025.7
2114A	A	2130 2313	X	X		X	X	X	X	2114	225600 W167.7	234942 W001.1

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
17 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING			DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2117R	B	0026	0130	X	X		X	X		X	X		2115	004326	E165.4	013708	W028.0
2117R	A	0258	0456	X	X		X	X		X	X		2116	023053	E138.6	032434	W054.9
2118R	A	0503	0644	X	X		X	X		X	X		2117	041819	E111.7	051201	W081.7
2119A	A	0648	0825	X	X		X	X		X	X		2118	060546	E084.9	065927	W108.6
2120A	A	0829	1012	X	X		X	X		X	X		2119	075312	E058.0	084653	W135.4
2121A	A	1017	1158	X	X		X	X		X	X		2120	094038	E031.4	103420	W162.3
2122A	A	1202	1344	X	X		X	X		X	X		2121	112805	E004.3	122146	E170.9
2123A	A	1348	1532	X	X		X	X	X	X	X		2122	131531	W022.6	140912	E144.0
2124A	A	1536	1716	X	X		X		X	X	X		2123	150257	W049.4	155639	E117.1
2125A	A	1720	1856	X	X		X		X	X	X		2124	165024	W076.3	174405	E090.3
2126A	A	1901	2045	X	X		X		X	X	X		2125	183750	W103.2	193131	E063.4
2127A	A	2049	2229	X	X		X		X	X	X		2126	202516	W130.0	211858	E036.6
2128A	A	2243	2349	X	X		X		X	X	X		2127	221243	W156.9	230624	E009.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
18 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T			H	ASCENDING			DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE			NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
21290	B	0019	0123	X	X		X		X	X	X		2128	000009	E176.3	005350	W017.2
21290	A	0123	0319	X	X		X		X	X	X	X	2129	014736	E149.4	024117	W044.0
2131R	A	0326	0510	X	X		X		X	X	X	X	2130	033502	E122.6	042843	W070.9
2131R	B	0508	0606	X	X		X		X	X	X	X	2131	052214	E095.8	061555	W097.7
2132A	A	0606	0742	X	X		X		X	X	X	X	2132	070940	E068.9	080322	W124.5
2133A	A	0746	0933	X	X		X		X	X	X	X	2133	085707	E042.0	095048	W151.4
2134A	A	0937	1116	X	X		X		X	X	X	X	2134	104433	E015.2	113814	W178.2
2135A	A	1120	1302	X	X		X		X	X	X	X	2135	123159	W011.7	132541	E154.9
2136A	A	1307	1447	X	X		X		X	X	X	X	2136	141926	W038.5	151307	E128.0
2137A	A	1451	1632	X	X	X	X		X	X	X	X	2137	160652	W065.4	170033	E101.2
2138A	A	1636	1813	X	X	X	X		X	X		X	2138	175418	W092.3	184800	E074.3
2139A	A	1817	2000	X	X	X	X		X	X		X	2139	194145	W119.1	203526	E047.5
2140A	A	2004	2146	X	X	X	X		X	X		X	2140	212911	W146.0	222252	E020.6
2141A	A	2150	2335	X	X		X		X	X	X	X	2141	231637	W172.8	001019	W006.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I R	T H I R	T D E M	S C R E	E S E M R	P W B R	H I R L S	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	E	M	R	B	R			HRMNSS DEGREE	HRMNSS DEGREE
2141Q	B	2334 0035				X	X	X	X	2142	010404 E160.3	015745 W033.1
2144R	A	0324 0524	X X			X	X	X	X	2143	025130 E133.4	034511 W060.0
2145R	A	0528 0705	X X			X	X	X	X	2144	043857 E106.6	053238 W088.9
2146A	B	0515 0543	X X			X	X	X	X	2145	062623 E079.7	072004 W113.7
2146A	A	0709 0845	X X			X	X	X	X	2146	081349 E052.8	090730 W140.6
2147A	A	0849 1032	X X			X	X	X	X	2147	100116 E026.0	105457 W167.5
2148A	A	1036 1219	X X			X	X	X	X	2148	114842 W000.9	124223 E165.7
2149A	A	1223 1407	X X			X	X	X	X	2149	133608 W027.7	142949 E138.8
2150A	A	1411 1550	X X			X	X	X	X	2150	152335 W054.6	161716 E112.0
2151A	A	1554 1735	X X			X	X	X	X	2151	171101 W081.5	180442 E085.1
2152A	A	1739 1914	X X			X	X	X	X	2152	185827 W108.3	195209 E058.3
2153A	A	1918 2104	X X			X	X	X	X	2153	204554 W135.2	213935 E031.4
2154A	A	2109 2250	X X			X	X	X	X	2154	223320 W162.0	232701 E004.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I R	T H I R	T D E M	S C R E	E S E M R	P W B R	H I R L S	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	E	M	R	B	R			HRMNSS DEGREE	HRMNSS DEGREE
2157R	B	0131 0235	X X			X	X	X	X	2155	002047 E171.1	011428 W022.3
2157R	A	0236 0435	X X			X	X	X	X	2156	020813 E144.3	030154 W049.2
2158R	A	0441 0623	X X			X	X	X	X	2157	035539 E117.4	044920 W076.0
2159A	A	0627 0803	X X			X	X	X	X	2158	054306 E090.5	063647 W102.9
2160A	A	0807 0950	X X			X	X	X	X	2159	073032 E063.7	082413 W129.8
2161A	A	0954 1135	X X			X	X	X	X	2160	091759 E036.8	101140 W156.6
2162A	A	1139 1321	X X			X	X	X	X	2161	110525 E010.0	115906 E176.5
2163A	A	1325 1507	X X			X	X	X	X	2162	125251 W016.9	134632 E149.7
2164A	A	1511 1652	X X	X		X	X	X	X	2163	144018 W043.8	153359 E122.8
2165A	A	1656 1835	X X	X	X	X	X	X	X	2164	162744 W070.6	172125 E096.0
2166A	A	1839 2020	X X	X	X	X	X	X	X	2165	181511 W097.5	190852 E069.1
2167A	A	2024 2210	X X	X	X	X	X	X	X	2166	200237 W124.3	205618 E042.2
2168A	A	2215 2354	X X			X	X	X	X	2167	215004 W151.2	224345 E015.4
										2168	233730 W178.1	003111 W011.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING		DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2171R	A	0336	0536	X	X		X	X		X	X	2169	012456	E155.1	021837	W038.3
2172A	A	0544	0718	X	X		X	X		X	X	2170	031223	E128.2	040604	W065.2
2173A	A	0722	0906	X	X		X	X		X	X	2171	045949	E101.3	055330	W092.1
2174A	A	0910	1052	X	X		X	X		X	X	2172	064716	E074.5	074057	W119.0
2175A	A	1056	1239	X	X		X	X		X	X	2173	083442	E047.6	092823	W145.8
2176A	A	1243	1426	X	X		X	X	X	X	X	2174	102209	E020.8	111550	W172.7
2177A	A	1430	1609	X	X		X		X	X	X	2175	120935	W006.1	130316	E160.5
2178A	A	1613	1754	X	X		X		X	X	X	2176	135702	W033.0	145042	E133.6
2179A	A	1758	1938	X	X		X		X	X	X	2177	154428	W059.8	163809	E106.8
2180A	A	1942	2123	X	X		X		X	X	X	2178	173154	W086.7	182535	E079.9
2181A	A	2127	2311	X	X		X		X	X	X	2179	191921	W113.5	201302	E053.0
												2180	210647	W140.4	220028	E026.2
												2181	225414	W167.3	234755	W000.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T			ASCENDING			DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2185R	B	0236	0439	X	X		X		X	X	X		2182	004140	E165.9	013521	W027.5
2185R	A	0440	0639	X	X		X		X	X	X		2183	022907	E139.0	032248	W054.4
2186A	A	0648	0823	X	X		X		X	X	X		2184	041633	E112.2	051014	W081.3
2187A	A	0827	1009	X	X		X		X	X	X		2185	060400	E085.3	065741	W108.1
2188A	A	1013	1156	X	X		X		X	X	X		2186	075126	E058.5	084507	W135.0
2189A	A	1200	1315	X	X		X		X	X	X		2187	093902	E031.6	103243	W161.9
2190A	A	1351	1526	X	X		X		X	X	X		2188	112629	E004.7	122009	E171.3
2191A	A	1530	1710	X	X		X		X	X	X		2189	131355	W022.2	140736	E144.4
2192A	A	1714	1854	X	X		X		X	X	X		2190	150122	W049.0	155502	E117.6
2193A	A	1858	2041	X	X		X		X	X	X		2191	164848	W075.9	174229	E090.7
2194A	A	2046	2229	X	X		X		X	X	X		2192	183615	W102.7	192955	E063.8
2195A	A	2233	0016	X	X		X		X	X	X		2193	202341	W129.6	211722	E037.0
21960	B	0017	0120				X		X	X	X		2194	221108	W156.5	230449	E010.1
													2195	235834	E176.6	005215	W016.8

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T I	T I	S R	E A		T M	H R		ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
21960	A	0120 0315				X	X	X	X			2196 014601 E149.8	023942 W043.6
2197R	B	0320 0414	X	X		X	X	X	X			2197 033327 E122.9	042708 W070.5
2198R	A	0415 0602	X	X		X	X	X	X			2198 052054 E096.1	061435 W097.4
2199A	A	0606 0740	X	X		X	X	X	X			2199 070821 E069.2	080201 W124.2
2200A	A	0744 0928	X	X		X	X	X	X			2200 085547 E042.4	094928 W151.1
2201A	A	0932 1118	X	X		X	X	X	X			2201 104314 E015.5	113654 W177.9
2202A	A	1122 1300	X	X		X	X	X	X			2202 123040 W011.4	132421 E155.2
2203A	A	1304 1447	X	X		X	X	X	X			2203 141807 W038.2	151148 E128.4
2204A	A	1451 1628	X	X		X	X	X	X			2204 160533 W065.1	165914 E101.5
2205A	A	1632 1813	X	X		X	X	X	X			2205 175300 W092.0	184641 E074.6
2206A	A	1817 1959	X	X		X	X	X	X	X		2206 194027 W118.8	203407 E047.8
2207A	A	2003 2146		X		X	X	X	X	X		2207 212753 W145.7	222134 E020.9
2208A	A	2150 2332	X			X	X	X	X	X		2208 231520 W172.5	000900 W006.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T I	T I	S R	E A		T M	H R		ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
2211R	A	0232 0431		X		X	X	X	X	X		2209 010246 E160.6	015627 W032.8
2213A	B	0431 0535		X		X	X	X	X	X		2210 025013 E133.7	034354 W059.7
2212R	A	0520 0704		X		X	X	X	X	X		2211 043740 E106.9	053120 W086.5
2213A	A	0709 0843	X	X		X	X	X	X			2212 062506 E080.0	071847 W113.4
2214A	A	0847 1030	X	X		X	X	X	X			2213 081233 E053.2	090613 W140.3
2215A	A	1034 1216	X	X		X	X	X	X			2214 095959 E026.3	105340 W167.1
2216A	A	1220 1402	X	X		X	X	X	X			2215 114726 W000.5	124107 E166.0
2217A	A	1406 1547	X	X		X	X	X	X			2216 133453 W027.4	142833 E139.2
2218A	A	1551 1732	X	X		X	X	X	X			2217 152219 W054.3	161600 E112.3
2219A	A	1737 1913	X	X		X	X	X	X			2218 170946 W081.2	180327 E085.4
2220A	A	1918 2102	X	X		X	X	X	X			2219 185713 W108.0	195053 E058.6
2221A	A	2110 2251	X	X		X	X	X	X			2220 204439 W134.9	213820 E031.7
												2221 223206 W161.7	232546 E004.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
22220	A	2255 0050					X X		X X		2222 001932	E171.4	011313 W022.0
22220	B	0050 0154					X X		X X		2223 020659	E144.6	030040 W048.9
22230	A	0156 0338					X X		X X		2224 035426	E117.7	044806 W075.7
2225R	B	0340 0443	X X				X X		X X		2225 054152	E090.8	063533 W102.6
2225R	A	0444 0620	X X				X X		X X		2226 072919	E064.0	082300 W129.4
2226A	A	0624 0802	X X				X X		X X		2227 091646	E037.1	101026 W156.3
2227A	A	0806 0949	X X				X X		X X		2228 110412	E010.2	115753 E176.8
2228A	A	0954 1136	X X				X X		X X		2229 125139	W016.6	134520 E150.0
2229A	A	1140 1321	X X				X X		X X		2230 143906	W043.5	153246 E123.1
2230A	A	1325 1504	X X				X X		X X		2231 162632	W070.3	172013 E096.2
2231A	A	1508 1652	X X	X X			X X	X X	X X		2232 181359	W097.2	190739 E069.4
2232A	A	1656 1831	X X	X X			X X	X X			2233 200126	W124.1	205506 E042.5
2233A	A	1835 2016	X X	X X			X X	X X			2234 214852	W150.9	224233 E015.7
2234A	A	2021 2207	X X	X X			X X	X X	X X		2235 233619	W177.8	002959 W011.2
22360	B	2354 0055					X		X X X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 NOVEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
22360	A	0056 0254					X		X X X		2236 012346	E155.3	021726 W038.1
2238R	B	0307 0410	X X				X		X X X		2237 031112	E128.5	040453 W064.9
2238R	A	0344 0537	X X				X		X X X		2238 045839	E101.6	055220 W091.8
2239A	A	0542 0718	X X				X		X X X		2239 064606	E074.8	073946 W118.7
2240A	A	0722 0905	X X				X		X X X		2240 083332	E047.9	092713 W145.5
2241A	A	0909 1053	X X				X		X X X		2241 102059	E021.1	111440 W172.4
2242A	A	1057 1238	X X				X		X X X		2242 120826	W005.8	130206 E160.8
2243A	A	1243 1423	X X				X		X X X		2243 135552	W032.7	144933 E133.9
2244A	A	1428 1606	X X				X		X X X		2244 154319	W059.6	163700 E107.1
2245A	A	1610 1752	X X				X		X X X		2245 173046	W086.4	182426 E080.2
2246A	A	1756 1936	X X				X		X X X		2246 191813	W113.3	201153 E053.3
2247A	A	1940 2123	X X				X		X X X		2247 210539	W140.1	215920 E026.5
2248A	A	2127 2311	X X				X		X X X		2248 225306	W167.0	234646 W000.4
22480	A	2315 0026					X		X X X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING			DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE			NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2251R	B	0156	0300	X	X		X		X	X	X		2249	004033	E166.2	013413	W023.3
2251R	A	0304	0455	X	X		X		X	X	X		2250	022759	E139.3	032140	W054.1
2252R	A	0500	0643	X	X		X		X	X	X		2251	041526	E112.5	050907	W081.0
2253A	A	0647	0824	X	X		X		X	X	X		2252	060253	E095.6	065633	W107.8
2254A	A	0828	1010	X	X		X		X	X	X		2253	075020	E058.7	084400	W134.7
2255A	A	1014	1155	X	X		X		X	X	X		2254	093746	E031.8	103127	W161.6
2256A	A	1159	1341	X	X		X		X	X	X		2255	112513	E005.0	121854	E171.6
2257A	A	1345	1528	X	X		X		X	X	X		2256	131240	W021.9	140620	E144.7
2258A	A	1533	1712	X	X		X	X		X	X		2257	150007	W048.7	155347	E117.8
2259A	A	1715	1855	X	X								2258	164733	W075.6	174114	E091.0
2260A	A	1859	2039	X	X		X	X		X	X		2259	183500	W102.5	192840	E064.1
2261A	A	2043	2226	X	X		X	X		X	X		2260	202227	W127.3	211607	E037.3
													2261	220954	W156.2	230334	E010.4
													2262	235720	E177.0	005101	W016.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 NOVEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING			DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE			NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	R	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2264R	A	0114	0312	X	X		X	X		X	X		2263	014447	E150.1	023827	W043.3
2265R	B	0312	0415	X	X		X	X		X	X		2264	033214	E123.2	042554	W070.2
2265R	A	0419	0558	X	X		X	X		X	X		2265	051941	E096.4	061321	W097.1
2266A	A	0603	0739	X	X		X	X		X	X		2266	070707	E069.5	080048	W123.9
2267A	A	0743	0927	X	X		X	X		X	X		2267	085434	E042.6	094815	W150.8
2268A	A	0931	1114	X	X		X	X		X	X		2268	104201	E015.8	113541	W177.7
2269A	A	1118	1259	X	X		X	X		X	X		2269	122928	W011.1	132308	E155.5
2270A	A	1303	1444	X	X		X	X		X	X		2270	141655	W037.9	151035	E128.6
2271A	A	1448	1628	X	X		X	X		X	X		2271	160421	W064.8	165802	E101.8
2272A	A	1632	1811	X	X		X	X		X	X		2272	175148	W091.7	184528	E074.9
2273A	A	1815	1956	X	X		X	X		X	X		2273	193915	W119.5	203255	E048.1
2274A	A	2000	2143	X	X		X	X		X	X		2274	212642	W145.4	222022	E021.2
2275A	A	2147	2334	X	X		X	X		X	X		2275	231409	W172.3	000749	W005.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
22750	A	2339 0050					X X		X X		2276	010135	E160.9	015516	W032.5
22760	A	0053 0235					X X		X X		2277	024902	E134.0	034242	W059.4
2278R	A	0240 0438	X X				X X		X X		2278	043629	E107.2	053009	W086.3
2278R	B	0436 0519	X X				X X		X X		2279	062356	E080.3	071736	W113.1
2279R	A	0520 0704	X X				X X		X X		2280	081123	E053.4	090503	W140.0
2280A	A	0709 0843	X X				X X		X X		2281	095849	E026.6	105230	W166.8
2281A	A	0847 1030	X X				X X		X X		2282	114616	W000.3	123956	E156.3
2282A	A	1034 1214	X X				X X		X X		2283	133343	W027.2	142723	E139.4
2283A	A	1219 1402	X X				X X		X X		2284	152110	W054.0	161450	E112.6
2284A	A	1406 1544	X X				X X		X X		2285	170837	W080.9	180217	E085.7
2285A	A	1549 1732	X X				X		X X X		2286	185604	W107.7	194944	E058.9
2286A	A	1736 1914	X X				X		X X X		2287	204330	W134.6	213711	E032.0
2287A	A	1918 2103	X X				X		X X X		2288	223057	W161.5	232437	E005.2
2288A	A	2107 2252	X X				X		X X X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 NOVEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
22890	A	2256 0050					X		X X X		2289	001824	E171.7	011204	W021.8
22890	B	0049 0151					X		X X X		2290	020551	E144.8	025931	W048.6
22900	A	0156 0337					X		X X X		2291	035318	E118.0	044658	W075.5
2291R	A	0341 0434	X X				X		X X X		2292	054045	E091.1	063425	W102.3
2292R	A	0437 0620	X X				X		X X X		2293	072812	E064.2	082152	W129.2
2293A	A	0624 0802	X X				X		X X X		2294	091538	E037.4	100918	W156.0
2294A	A	0806 0947	X X				X		X X X		2295	110305	E010.5	115645	E177.1
2295A	A	0951 1134	X X				X		X X X		2296	125032	W016.4	134412	E150.2
2296A	A	1138 1321	X X				X		X X X		2297	143759	W043.2	153139	E123.4
2297A	A	1326 1504	X X				X		X X X		2298	162526	W070.1	171906	E096.5
2298A	A	1508 1647	X X				X		X X X		2299	181253	W097.0	190633	E069.7
2299A	A	1651 1832	X X				X		X X X		2300	200020	W123.8	205400	E042.8
2300A	A	1836 2016	X X				X		X X X		2301	214747	W150.7	224127	E015.9
2301A	A	2021 2206	X X				X		X X X		2302	233513	W177.5	002853	W011.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
1 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I R	T H I R	T D E M	S C M R	E R B	P M R	W M R	I R L	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
23040	A	2353 0151				X		X	X	X	2303	012240	E155.6	021620	W037.8
23040	B	0151 0254				X		X	X	X	2304	031007	E128.8	040347	W054.7
2305R	A	0259 0458	X	X		X		X	X	X	2305	045734	E101.9	055114	W091.5
2305R	B	0456 0542	X	X		X		X	X	X	2306	064501	E075.0	073841	W118.4
2306A	A	0543 0724	X	X		X		X	X	X	2307	083228	E048.2	092608	W145.3
2307A	A	0728 0905	X	X		X		X	X	X	2308	101955	E021.3	111335	W172.1
2308A	A	0909 1052	X	X		X		X	X	X	2309	120722	W005.6	130102	E161.0
2309A	A	1056 1239	X	X		X		X	X	X	2310	135449	W032.4	144829	E134.2
2310A	A	1243 1421	X	X		X		X	X	X	2311	154216	W059.3	163555	E107.3
2311A	A	1427 1605	X	X		X	X		X	X	2312	172942	W086.2	182322	E080.5
2312A	A	1610 1750	X	X		X	X		X	X	2313	191709	W113.0	201049	E053.6
2313A	A	1754 1935	X	X		X	X		X	X	2314	210436	W139.9	215816	E026.7
2314A	A	1939 2122	X	X		X	X		X	X	2315	225203	W166.7	234543	W000.2
2315A	A	2126 2310	X	X		X	X		X	X					
23150	A	2314 0027				X	X		X	X					

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
2 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I R	T H I R	T D E M	S C M R	E R B	P M R	W M R	I R L	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
23160	A	0031 0215				X	X		X	X	2317	022657	E139.5	032037	W053.9
2318R	A	0220 0414	X	X		X	X		X	X	2318	041424	E112.7	050804	W080.8
2318R	B	0415 0452	X	X		X	X		X	X	2319	060154	E085.8	065534	W107.6
2319R	A	0458 0642	X	X		X	X		X	X	2320	074921	E059.0	084301	W134.5
2320A	A	0646 0823	X	X		X	X		X	X	2321	093648	E032.1	103028	W161.3
2321A	A	0827 1010	X	X		X	X		X	X	2322	112415	E005.2	121755	E171.8
2322A	A	1014 1154	X	X		X	X		X	X	2323	131142	W021.7	140521	E145.0
*2323A	A	1237 1340	X	X		X	X		X	X	2324	145909	W048.5	155248	E118.1
2324A	A	1344 1524	X	X		X	X		X	X	2325	164636	W075.4	174015	E091.2
2325A	A	1529 1711	X	X	X	X	X		X	X	2326	183403	W102.2	192742	E064.4
2326A	A	1715 1851	X	X	X	X	X		X		2327	202130	W129.1	211509	E037.5
2327A	A	1855 2038	X	X	X	X	X		X		2328	220857	W156.0	230236	E010.6
2328A	A	2041 2228	X	X	X	X	X		X		2329	235624	E177.2	005003	W016.2
23290	B	2234 2326				X	X		X						
23290	A	2326 0124				X	X		X	X					
*THIR + LRIR ON AT 1157 OFF AT 1340															

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
3 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
23300	A	0133 0313					X X	X X			2330	014351 E150.3	023730 W043.1
2331R	B	0314 0412	X X				X X	X X			2331	033118 E123.5	042457 W070.0
2332R	A	0412 0558		X			X X	X X X			2332	051845 E096.6	061224 W096.8
2333A	A	0603 0739		X			X X	X X X			2332	051845 E096.6	061224 W096.8
2334A	A	0743 0924		X			X X	X X X			2333	070611 E069.7	075951 W123.7
2335A	A	0929 1111		X			X X	X X X			2334	085338 E042.9	094718 W150.5
2336A	A	1115 1258		X			X X	X X X			2335	104105 E016.0	113445 W177.4
2337A	A	1302 1445		X			X X	X X X			2336	122832 W010.9	132212 E155.7
2338A	A	1450 1626	X X				X	X X X X			2337	141559 W037.7	150939 E128.9
2339A	A	1630 1812	X X	X			X X	X X X			2338	160326 W064.6	165706 E102.0
2340A	A	1816 1958	X X	X			X X	X X X			2339	175054 W091.5	184433 E075.2
2341A	A	2002 2145	X X				X	X X X X			2340	193821 W118.3	203200 E048.3
2342A	A	2149 2332	X X				X	X X X X			2341	212548 W145.2	221927 E021.4
23420	B	2332 0031					X	X X X X			2342	231315 W172.0	000654 W005.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
4 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
23430	A	0032 0230					X	X X X X			2343	010042 E161.1	015421 W032.3
2345R	A	0327 0519	X X				X	X X X X			2344	024809 E134.2	034148 W059.2
2346R	A	0526 0702	X X				X	X X X X			2345	043536 E107.4	052915 W086.1
2347A	A	0706 0844	X X				X	X X X			2346	062303 E080.5	071642 W112.9
2348A	A	0848 1028	X X				X	X X X			2347	081030 E057.7	090409 W139.8
2349A	A	1033 1215	X X				X	X X X			2348	095757 E026.8	105136 W165.6
2350A	A	1219 1402	X X				X	X X X			2349	114524 W000.1	123903 E166.5
2351A	A	1406 1547	X X	X			X X	X X			2350	133251 W026.9	142630 E139.7
2352A	A	1551 1728	X X	X			X X	X X			2351	152018 W053.8	161357 E112.8
2353A	A	1732 1911	X X	X			X X	X X			2352	170745 W080.6	180124 E085.9
2354A	A	1916 2102	X X	X			X X	X X			2353	185512 W107.5	194851 E059.1
2355A	A	2106 2246	X X				X	X X X			2354	204239 W134.4	213619 E032.2
											2355	223006 W161.2	232346 E005.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
5 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R	R	E	M	R	B	R		HRMNSS DEGREE	HRMNSS DEGREE
2358R	A	0135 0334	X	X		X	X	X	X	2356	001733 E171.9	011113 W021.5
2358R	B	0332 0436	X	X		X	X	X	X	2357	020500 E145.0	025840 W048.4
2359R	A	0437 0618	X	X		X	X	X	X	2358	035227 E118.2	044607 W075.2
2360A	A	0622 0800	X	X		X	X	X	X	2359	053954 E091.3	063334 W102.1
2361A	A	0805 0946	X	X		X	X	X	X	2360	072721 E064.5	082101 W129.0
2362A	A	0950 1134	X	X		X	X	X	X	2361	091448 E037.6	100828 W155.8
2363A	A	1138 1319	X	X		X	X	X	X	2362	110216 E010.7	115555 E177.3
2364A	A	1324 1507	X	X		X	X	X	X	2363	124943 W016.2	134322 E150.5
2365A	A	1511 1646	X	X		X	X	X	X	2364	143710 W043.0	153049 E123.6
2366A	A	1650 1832	X	X	X	X	X	X	X	2365	162437 W069.9	171816 E096.7
2367A	A	1836 2015	X	X	X	X	X	X	X	2366	181204 W096.8	190543 E069.9
2368A	A	2019 2206	X	X		X	X	X	X	2367	195931 W123.6	205310 E043.0
23690	B	2211 2304				X	X	X	X	2368	214658 W150.5	224038 E016.1
23690	A	2305 0103				X	X	X	X	2369	233425 W177.3	002805 W010.8

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
6 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T R	T R	S E	E P	T H	W I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R	R	E	M	R	B	R		HRMNSS DEGREE	HRMNSS DEGREE
23700	A	0115 0255				X	X	X	X	2370	012152 E155.8	021532 W037.6
2372R	A	0300 0443	X	X		X	X	X	X	2371	030919 E128.9	040259 W064.5
2372R	B	0442 0539	X	X		X	X	X	X	2372	045647 E102.1	055026 W091.3
2373R	A	0539 0721	X	X		X	X	X	X	2373	064414 E075.2	073753 W118.2
2374A	A	0726 0903	X	X		X	X	X	X	2374	083141 E048.4	092520 W145.1
2375A	A	0907 1050	X	X		X	X	X	X	2375	101908 E021.5	111247 W171.9
2376A	A	1054 1237	X	X		X	X	X	X	2376	120635 W005.4	130014 E161.2
2377A	A	1241 1420	X	X		X	X	X	X	2377	135402 W032.2	144742 E134.3
2378A	A	1424 1606	X	X		X	X	X	X	2378	154129 W059.1	163509 E107.5
2379A	A	1610 1748	X	X		X	X	X	X	2379	172856 W086.0	182236 E083.6
2380A	A	1752 1921	X	X		X	X	X	X	2380	191624 W112.8	201003 E053.8
2381A	A	1937 2122	X	X		X	X	X	X	2381	210351 W139.7	215730 E026.9
2382A	A	2126 2309	X	X		X	X	X	X	2382	225118 W166.5	234457 E000.0
23820	B	2306 0009				X	X	X	X			

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
7 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF		L R	T R	T R	S E	E M	P R	W R	I S	DATA ORBIT	ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG	
		HRMN	HRMN	R	R	E	M	R	B	R	L		HRMNSS	DEGREE	HRMNSS	DEGREE
23830	A	0009	0207				X	X		X	X	2383	003845	E166.6	013224	W025.8
2385R	A	0218	0412	X	X		X	X		X	X	2384	022612	E139.7	031951	W053.7
2385R	B	0358	0456	X	X		X	X		X	X	2385	041339	E112.9	050719	W080.5
2386R	A	0457	0639	X	X		X	X		X	X	2386	060106	E086.0	065446	W107.4
2387A	A	0643	0822	X	X		X	X		X	X	2387	074834	E059.2	084213	W134.3
2388A	A	0826	1008	X	X		X	X		X	X	2388	093601	E032.3	102940	W161.1
2389A	A	1012	1153	X	X		X	X		X	X	2389	112328	E005.4	121707	E172.0
2390A	A	1157	1336	X	X		X	X		X	X	2390	131055	W021.5	140434	E145.1
2391A	A	1340	1526	X	X		X	X	X	X	X	2391	145822	W048.3	155201	E118.3
2392A	A	1530	1707	X	X		X		X	X	X	2392	164549	W075.2	173929	E091.4
2393A	A	1711	1851	X	X		X		X	X	X	2393	183317	W102.1	192656	E064.6
2394A	A	1855	2038	X	X		X		X	X	X	2394	202044	W128.9	211423	E037.7
2395A	A	2043	2225	X	X		X		X	X	X	2395	220811	W155.8	230150	E010.8
23960	B	2222	2325				X		X	X	X	2396	235538	E177.4	004917	W016.0
23960	A	2326	0124				X		X	X	X					

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
8 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF		L R	T R	T R	S E	E M	P R	W R	I S	DATA ORBIT	ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG	
		HRMN	HRMN	R	R	E	M	R	B	R	L		HRMNSS	DEGREE	HRMNSS	DEGREE
2399R	A	0322	0456	X	X		X		X	X	X	2397	014305	E150.5	023645	W042.9
2399R	B	0456	0600		X		X		X	X	X	2398	033033	E123.7	042412	W069.8
2400A	A	0601	0737		X		X		X	X	X	2399	051800	E096.8	061139	W096.6
2401A	A	0741	0923		X		X		X	X	X	2400	070527	E069.9	075906	W123.5
2402A	A	0928	1110		X		X		X	X	X	2401	085254	E043.0	094633	W150.4
2403A	A	1115	1258		X		X		X	X	X	2402	104021	E016.2	113400	W177.2
2404A	A	1302	1441		X		X		X	X	X	2403	122749	W010.7	132128	E155.9
2405A	A	1446	1626		X		X		X	X	X	2404	141516	W037.6	150855	E129.1
2406A	A	1630	1809		X		X		X	X	X	2405	160243	W064.4	165622	E102.2
2407A	A	1813	1955		X		X		X	X	X	2406	175010	W091.3	184349	E075.3
2408A	A	1959	2143		X		X		X	X	X	2407	193737	W118.1	203117	E048.5
2409A	A	2147	2331		X		X		X	X	X	2408	212505	W145.0	221844	E021.6
24090	B	2328	0031				X		X	X	X	2409	231232	W171.9	000611	W005.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
9 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING			DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE			NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE	
24100	A	0031	0229					X		X	X	X	2410	005959	E161.3	015338	W032.2	
2412R	A	0320	0518		X		X		X	X	X	X	2411	024726	E134.4	034105	W059.0	
2413R	A	0524	0704		X		X		X	X	X	X	2412	043457	E107.5	052836	W085.9	
2414A	A	0709	0842	X	X		X		X	X	X		2413	062225	E080.7	071604	W112.7	
2415A	A	0846	1027	X	X		X		X	X	X		2414	080952	E053.8	090331	W139.6	
2416A	A	1031	1215	X	X		X		X	X	X		2415	095719	E026.9	105058	W166.5	
2417A	A	1220	1402	X	X		X	X	X	X	X		2416	114446	E000.1	123825	W166.7	
2418A	A	1406	1532	X	X	X	X	X		X	X		2417	133214	W026.8	142553	E139.8	
2419A	A	1536	1728	X	X	X	X	X		X	X		2418	151941	W053.6	161320	E112.9	
2420A	A	1732	1913	X	X	X	X	X		X			2419	170708	W080.5	180047	E086.1	
2421A	A	1917	2101	X	X	X	X	X		X			2420	185435	W107.4	194814	E059.2	
2422A	A	2106	2247	X	X		X	X		X	X		2421	204203	W134.2	213542	E032.3	
24230	B	2252	2347					X	X		X	X	2422	222930	W161.1	232309	E005.5	

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
10 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING			DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE			NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	DATA	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE	
24230	A	2347	0145					X	X		X	X	2423	001657	E172.0	011036	W021.4	
24240	A	0148	0334					X	X		X	X	2424	020425	E145.2	025803	W048.2	
2425R	B	0334	0434	X	X			X	X		X	X	2425	035151	E118.3	044531	W075.1	
2426R	A	0433	0618	X	X			X	X		X	X	2426	053919	E091.4	063258	W102.0	
2427A	A	0622	0758	X	X			X	X		X	X	2427	072647	E064.6	082025	W128.8	
2428A	A	0802	0950	X	X			X	X		X	X	2428	091414	E037.7	100753	W155.7	
2429A	A	0954	1132	X	X			X	X		X	X	2429	110141	E010.9	115520	E177.4	
2430A	A	1136	1319	X	X			X	X		X	X	2430	124908	W016.0	134247	E150.6	
2431A	A	1323	1504	X	X			X	X		X	X	2431	143636	W042.9	153015	E123.7	
2432A	A	1508	1647	X	X			X	X		X	X	2432	162403	W069.7	171742	E096.8	
2433A	A	1651	1831	X	X			X	X		X	X	2433	181130	W096.6	190509	E070.0	
2434A	A	1835	2016	X	X			X	X		X	X	2434	195858	W123.5	205236	E043.1	
2435A	A	2020	2203	X	X			X	X		X	X	2435	214625	W150.3	224004	E016.3	
24360	B	2201	2304					X	X		X	X	2436	233352	W177.2	002731	W010.6	
24360	A	2305	0103					X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
11 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF		L I R	T I R	T D A	S C A	E S M	P R B	T W R	H I R L	DATA ORBIT	ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG	
		HRMN	HRMN	R	R	E	M	R	B	R	L		HRMNSS	DEGREE	HRMNSS	DEGREE
24370	A	0111	0250				X	X		X	X	2437	012120	E155.9	021458	W037.5
2439R	A	0258	0438	X	X		X	X		X	X	2438	030847	E129.1	040226	W064.3
2439R	B	0442	0536	X	X		X	X		X	X	2439	045614	E102.2	054953	W091.2
2440R	A	0539	0719	X	X		X	X		X	X	2440	064342	E075.3	073720	W118.1
2441A	A	0728	0903	X	X		X	X		X	X	2441	083109	E048.5	092448	W144.9
2442A	A	0907	1052	X	X		X	X		X	X	2442	101836	E021.6	111215	W171.8
2443A	A	1056	1235	X	X		X	X		X	X	2443	120604	W005.2	125942	E161.3
2444A	A	1239	1424	X	X		X	X	X	X	X	2444	135331	W032.1	144710	E134.5
2445A	A	1428	1606	X	X		X		X	X	X	2445	154058	W059.0	163437	E107.6
2446A	A	1610	1748	X	X		X		X	X	X	2446	172826	W085.8	182204	E080.7
2447A	A	1752	1936	X	X		X		X	X	X	2447	191553	W112.7	200932	E053.9
2448A	A	1940	2120	X	X		X		X	X	X	2448	210320	W139.6	215659	E027.0
2449A	A	2124	2307	X	X		X		X	X	X	2449	225048	W166.4	234426	E000.1

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
12 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF		L I R	T I R	T D A	S C A	E S M	P R B	T W R	H I R L	DATA ORBIT	ASCENDING NODE TIME LONG		DESCENDING NODE TIME LONG	
		HRMN	HRMN	R	R	E	M	R	B	R	L		HRMNSS	DEGREE	HRMNSS	DEGREE
2452R	B	0012	0116	X	X		X		X	X	X	2450	003815	E166.7	013154	W026.7
2452R	A	0301	0452	X	X		X		X	X	X	2451	022543	E139.8	031921	W053.6
2453R	A	0459	0640	X	X		X		X	X	X	2452	041310	E113.0	050649	W080.4
2454A	A	0644	0820	X	X		X		X	X	X	2453	060037	E086.1	065416	W107.3
2455A	A	0824	1008	X	X		X		X	X	X	2454	074805	E059.2	084143	W134.2
2456A	A	1012	1151	X	X		X		X	X	X	2455	093532	E032.4	102911	W161.0
2457A	A	1157	1342	X	X		X		X	X	X	2456	112259	121638	121638	E172.1
2458A	A	1346	1525	X	X		X		X	X	X	2457	131027	W021.4	140405	E145.2
2459A	A	1529	1709	X	X		X		X	X	X	2458	145754	W048.2	155133	E118.4
2460A	A	1713	1852	X	X		X		X	X	X	2459	164522	W075.1	173900	E091.5
2461A	A	1856	2037	X	X		X		X	X	X	2460	183249	W102.0	192628	E064.6
2462A	A	2042	2226	X	X		X		X	X	X	2461	202016	W128.8	211355	E037.8
2463A	A	2230	0012	X	X		X		X	X	X	2462	220744	W155.7	230122	E010.9
												2463	235511	E177.5	004850	W016.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
13 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P E	W M	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L		HRMNSS DEGREE	HRMNSS DEGREE
2466R	A	0256 0456	X	X		X		X	X	X	2464	014239 E150.6	023617 W042.8
2466R	B	0455 0600	X	X		X		X	X	X	2465	033006 E123.7	042345 W069.7
2469A	A	0727 0929	X	X		X		X	X	X	2466	051733 E096.9	061112 W096.6
2470A	A	1117 1256	X	X		X		X	X	X	2467	070501 E070.0	075839 W123.4
2471A	A	1300 1446	X	X		X	X	X	X	X	2468	085228 E043.1	094607 W150.3
2472A	A	1451 1625	X	X		X	X		X	X	2469	103956 E016.3	113334 W177.2
2475A	A	1959 2142	X	X		X	X		X	X	2470	122723 W010.6	132102 E156.0
2476A	A	2146 2330	X	X		X	X		X	X	2471	141451 W037.5	150829 E129.2
24760	B	2328 0031				X	X		X	X	2472	160218 W064.3	165557 E102.3
											2473	174945 W091.2	184324 E075.4
											2474	193713 W118.1	203051 E048.5
											2475	212440 W144.9	221819 E021.7
											2476	231208 W171.8	000546 W005.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
14 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	P E	W M	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L		HRMNSS DEGREE	HRMNSS DEGREE
24770	A	0032 0229				X	X		X	X	2477	005935 E161.4	015314 W032.1
2479R	A	0236 0416	X	X		X	X		X	X	2478	024703 E134.5	034041 W058.9
2479R	B	0415 0517	X	X		X	X		X	X	2479	043430 E107.6	052809 W085.8
2480R	A	0517 0701	X	X		X	X		X	X	2480	062158 E080.8	071536 W112.6
2481A	A	0706 0843	X	X		X	X		X	X	2481	080925 E053.9	090304 W139.5
2482A	A	0847 1029	X	X		X	X		X	X	2482	095653 E027.0	105031 W166.4
2483A	A	1033 1214	X	X		X	X		X	X	2483	114420 E000.2	123758 E166.8
2484A	A	1218 1401	X	X		X	X		X	X	2484	133148 E026.7	142526 E139.9
2485A	A	1405 1545	X	X		X	X		X	X	2485	151915 W053.5	161253 E113.0
2486A	A	1549 1727	X	X		X	X		X	X	2486	170642 W080.4	180021 E086.2
2487A	A	1731 1913	X	X		X	X		X	X	2487	185410 W107.3	194748 E059.3
2489A	A	2103 2244	X	X		X	X		X	X	2488	204137 W134.1	213516 E032.4
24900	B	2243 2346				X	X		X	X	2489	222905 W161.0	232243 E005.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
15 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
24900	A	2346 0144					X	X		X	X	2490	001632 E172.1	0110:11 W021.3
24910	A	0155 0333					X	X		X	X	2491	020400 E145.3	025738 W048.2
2492R	B	0334 0431	X	X			X	X		X	X	2492	035127 E118.4	044506 W075.0
2493R	A	0430 0618	X	X			X	X		X	X	2493	053855 E091.5	063233 W101.9
2494A	A	0623 0800	X	X			X	X		X	X	2494	072622 E064.7	082001 W128.8
2495A	A	0804 0946	X	X			X	X		X	X	2495	091350 E037.8	100728 W155.6
2496A	A	0950 1133	X	X			X	X		X	X	2496	110117 E010.9	115456 E177.5
2497A	A	1137 1319	X	X			X	X		X	X	2497	124845 W015.9	134223 E150.6
2498A	A	1323 1507	X	X			X	X	X	X	X	2498	143612 W042.8	152951 E123.8
2499A	A	1511 1650	X	X	X	X			X	X	X	2499	162340 W069.7	171718 E096.9
2500A	A	1654 1830	X	X	X	X			X	X	X	2500	181108 W096.6	190446 E070.1
2501A	A	1834 2016	X	X	X	X			X	X	X	2501	195835 W123.4	205213 E043.2
2502A	A	2020 2203	X	X	X	X			X	X	X	2502	214603 W150.3	223941 E016.3
25030	B	2224 2303					X		X	X	X	2503	233330 W177.1	002708 W010.6
25030	A	2304 0102					X		X	X	X			

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
16 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E E	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
	S	HRMN HRMN	R	R	E	M	R	B	R	L	S		HRMNSS DEGREE	HRMNSS DEGREE
25040	A	0111 0252					X		X	X	X	2504	012058 E156.0	021436 W037.4
2505R	B	0254 0350	X	X			X		X	X	X	2505	030825 E129.2	040203 W064.3
2506R	A	0350 0535	X	X			X		X	X	X	2506	045558 E102.3	054936 W091.1
2507R	B	0540 0719	X	X			X		X	X	X	2507	064325 E075.4	073703 W118.0
2507R	A	0535 0603	X	X			X		X	X	X	2508	083053 E048.5	092431 W144.9
2508A	A	0725 0903	X	X			X		X	X	X	2509	101820 E021.7	111158 W171.7
2509A	A	0907 1050	X	X			X		X	X	X	2510	120548 W005.2	125926 E161.4
2510A	A	1054 1236	X	X			X		X	X	X	2511	135315 W032.1	144654 E134.5
2511A	A	1241 1423	X	X	X	X			X	X	X	2512	154043 W058.9	163421 E107.7
2512A	A	1427 1606	X	X	X	X			X	X	X	2513	172811 W085.8	182149 E080.8
2513A	A	1610 1748	X	X	X	X			X	X	X	2514	191538 W112.7	200916 E053.9
2514A	A	1752 1937	X	X	X	X			X	X	X	2515	210306 W139.5	215644 E027.1
2515A	A	1941 2119	X	X	X	X			X	X	X	2516	225033 W166.4	234412 E000.2
2516A	A	2123 2305	X	X			X		X	X	X			

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
17 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING		DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	HRMNSS	DEGREE	HRMNSS	DEGREE
2519R	A	0154	0352	X	X		X	X	X	X		2517 003801	E166.7	013139	W026.7
2519R	B	0352	0456	X	X		X	X	X	X		2518 022529	E139.9	031907	W053.5
2520R	A	0501	0639	X	X		X	X	X	X		2519 041256	E113.0	050634	W080.4
2521A	A	0644	0820	X	X		X	X	X	X		2520 060024	E086.2	065402	W107.3
2522A	A	0824	1008	X	X		X	X	X	X		2521 074751	E059.3	084130	W134.1
2523A	A	1012	1154	X	X		X	X	X	X		2522 093519	E032.4	102857	W161.0
2524A	A	1158	1340	X	X		X	X	X	X		2523 112247	E005.6	121625	E172.2
2525A	A	1344	1524	X	X		X	X	X	X		2524 131014	W021.3	140352	E145.3
2526A	A	1528	1707	X	X		X	X	X	X		2525 145742	W048.2	155120	E118.4
2527A	A	1711	1850	X	X		X	X	X	X		2526 164510	W075.3	173848	E091.6
2528A	A	1855	2036	X	X		X	X	X	X		2527 183237	W101.9	192615	E064.7
2529A	A	2041	2223	X	X		X	X	X	X		2528 202005	W128.8	211343	E037.8
25300	B	2222	2326				X	X	X	X		2529 220732	W155.6	230110	E011.0
25300	A	2325	0123				X	X	X	X		2530 235500	E177.5	004838	W015.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
18 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING		DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	HRMNSS	DEGREE	HRMNSS	DEGREE
25310	A	0132	0312				X	X	X	X		2531 014228	E150.6	023606	W042.8
2532R	B	0312	0411	X	X		X	X	X	X		2532 032955	E123.8	042333	W069.6
2533R	A	0411	0557	X	X		X	X	X	X		2533 051723	E096.9	061101	W096.5
2534A	A	0601	0736	X	X		X	X	X	X		2534 070451	E070.0	075829	W123.4
2535A	A	0740	0923	X	X		X	X	X	X		2535 085218	E043.2	094556	W150.3
2536A	A	0927	1111	X	X		X	X	X	X		2536 103946	E016.3	113324	W177.1
2537A	A	1115	1255	X	X		X	X	X	X		2537 122714	W010.6	132052	E156.0
2538A	A	1259	1441	X	X		X	X	X	X		2538 141441	W037.4	150819	E129.2
2539A	A	1445	1624	X	X		X	X	X	X		2539 160209	W064.3	165547	E102.3
2540A	A	1628	1809	X	X		X	X	X	X		2540 174937	W091.1	184315	E075.5
2541A	A	1814	1954	X	X		X	X	X	X		2541 193704	W118.0	203042	E048.6
2542A	A	1958	2139	X	X		X	X	X	X		2542 212432	W144.9	221810	E021.7
2543A	A	2143	2329	X	X		X	X	X	X		2543 231200	W171.7	000538	W005.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R I	T H I	T R	S E	E P	T H I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S		HRMNSS DEGREE	HRMNSS DEGREE
2546R	A	0215 0414	X X		X X		X X		2544	005927 E161.4	015305 W032.0
2546R	B	0414 0518	X X		X X		X X		2545	024655 E134.5	034033 W058.9
2547R	A	0518 0701	X X		X X		X X		2546	043423 E107.6	052801 W085.8
2548A	A	0705 0841	X X		X X		X X		2547	062150 E080.8	071528 W112.6
2549A	A	0845 1028	X X		X X		X X		2548	080918 E053.9	090256 W139.5
2550A	A	1032 1215	X X		X X		X X		2549	095646 E027.1	105024 W166.4
2551A	A	1219 1359	X X		X X		X X		2550	114414 E000.2	123751 E166.8
2552A	A	1403 1542	X X		X X		X X		2551	133141 W026.7	142519 E139.9
2553A	A	1553 1730	X X						2552	151909 W053.6	161247 E113.1
2554A	A	1734 1911	X X		X		X X X		2553	170637 W080.4	180014 E086.2
2555A	A	1915 2059	X X		X		X X X		2554	185404 W107.3	194742 E059.3
2556A	A	2103 2245	X X		X		X X X		2555	204132 W134.1	213510 E032.5
25570	B	2242 2345			X		X X X		2556	222900 W161.0	232238 E005.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 DECEMBER 1975

INT ORBIT AND STDN	H D R	HDRSS TIME ON OFF	L R I	T H I	T R	S E	E P	T H I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S		HRMNSS DEGREE	HRMNSS DEGREE
25570	A	2346 0138			X		X X X		2557	001628 E172.1	011005 W021.3
2559R	A	0155 0336	X X		X		X X X		2558	020355 E145.3	025733 W048.1
2559R	B	0334 0436	X X						2559	035123 E118.4	044501 W075.0
2560R	A	0436 0618	X X		X		X X X		2560	053851 E091.5	063229 W101.9
2561A	A	0623 0800	X X		X		X X X		2561	072618 E064.7	081956 W128.7
2562A	A	0804 0946	X X		X		X X X		2562	091346 E037.8	100724 W155.6
2563A	A	0950 1133	X X		X		X X X		2563	110114 E010.9	115452 E177.5
2564A	A	1137 1317	X X		X		X X X		2564	124842 W015.9	134219 E150.7
2565A	A	1321 1503	X X		X		X X X		2565	143609 W042.8	152947 E123.8
2566A	A	1507 1646	X X		X		X X X		2566	162337 W069.7	171715 E097.0
2567A	B	1618 1649	X X						2567	181105 W096.5	190443 E070.1
2567A	A	1650 1829	X X		X		X X X		2568	195833 W123.4	205210 E043.2
2568A	A	1834 2015	X X		X		X X X		2569	214600 W150.3	223938 E016.3
2569A	A	2019 2203	X X		X		X X X		2570	233328 W177.1	002706 W010.5
25700	B	2200 2232			X		X X X				
25700	A	2304 0102			X		X X X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S				HRMNSS DEGREE	HRMNSS DEGREE
25710	A	0111 0251				X	X	X	X		2571	012056 E156.0	021434 W037.4
2573R	A	0259 0444	X	X		X	X	X	X		2572	030824 E129.1	040201 W064.3
2573R	B	0443 0537	X	X		X	X	X	X		2573	045552 E102.3	054929 W091.1
2574A	A	0538 0715	X	X		X	X	X	X		2574	064319 E075.4	073657 W118.0
2575A	A	0719 0902	X	X		X	X	X	X		2575	083047 E048.6	092425 W144.9
2576A	A	0906 1051	X	X		X	X	X	X		2576	101815 E021.7	111153 W171.7
2577A	A	1055 1236	X	X		X	X	X	X		2577	120543 W005.2	125920 E161.4
2578A	A	1240 1422	X	X		X	X	X	X		2578	135310 W032.0	144648 E134.6
2579A	A	1426 1604	X	X		X	X	X	X		2579	154038 W058.9	163416 E107.7
2580A	A	1617 1749	X	X		X	X	X	X		2580	172906 W085.8	182144 E080.8
2581A	A	1752 1932	X	X		X	X	X	X		2581	191534 W112.7	200912 E053.9
2582A	A	1936 2120	X	X		X	X	X	X		2582	210302 W139.5	215639 E027.1
2583A	A	2124 2307	X	X		X	X	X	X		2583	225029 W166.4	234407 E000.2
25830	B	2316 0008				X	X	X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R	T H	T D	S C	E S	E P	T W	H I	DATA ORBIT	ASCENDING NODE TIME LONG	DESCENDING NODE TIME LONG
		HRMN HRMN	R R	R R	E M	R B	R L	S				HRMNSS DEGREE	HRMNSS DEGREE
25840	A	0008 0206				X	X	X	X		2584	003757 E166.7	013135 W026.7
2586R	A	0217 0359	X	X		X	X	X	X		2585	022525 E139.9	031903 W053.5
2586R	B	0358 0458	X	X		X	X	X	X		2586	041253 E113.0	050631 W080.4
2587R	A	0457 0643	X	X		X	X	X	X		2587	060021 E086.2	065358 W107.3
2588A	A	0647 0821	X	X		X	X	X	X		2588	074749 E059.3	084126 W134.1
2589A	A	0825 1008	X	X		X	X	X	X		2589	093516 E032.4	102854 W161.0
2590A	A	1012 1154	X	X		X	X	X	X		2590	112244 E005.6	121622 E172.2
2591A	A	1158 1338	X	X		X	X	X	X		2591	131012 W021.3	140350 E145.3
2592A	A	1342 1523	X	X		X	X	X	X		2592	145740 W048.2	155117 E118.4
2593A	A	1527 1706	X	X		X	X	X	X		2593	164508 W075.1	173845 E091.5
2594A	A	1710 1850	X	X		X	X	X	X		2594	183236 W101.9	192613 E064.7
2595A	A	1854 2036	X	X		X	X	X	X		2595	202003 W128.8	211341 E037.8
2596A	A	2040 2223	X	X		X	X	X	X		2596	220731 W155.7	230109 E010.9
25970	B	2222 2325				X	X	X	X		2597	235459 E177.5	004837 W015.9
25970	A	2325 0123				X	X	X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING		DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
25980	A	0133	0312					X	X		X	X	2598	014227	E150.6	023605	W042.8
2500R	A	0320	0504	X	X			X	X		X	X	2599	032955	E123.8	042332	W069.6
2600R	B	0503	0600	X	X			X	X		X	X	2600	051731	E096.9	061109	W096.6
2601A	A	0602	0737	X	X			X	X		X	X	2601	070459	E070.0	075837	W123.4
2602A	A	0741	0925	X	X			X	X		X	X	2602	085227	E043.1	094604	W150.3
2603A	A	0930	1111	X	X			X	X		X	X	2603	103955	E016.3	113332	W177.1
2604A	A	1115	1257	X	X			X	X		X	X	2604	122723	W010.6	132100	E156.0
2605A	A	1301	1444	X	X			X	X	X	X	X	2605	141451	W037.5	150828	E129.1
2606A	A	1448	1625	X	X			X		X	X	X	2606	160219	W064.3	165556	E102.3
2607A	A	1629	1810	X	X	X	X			X	X	X	2607	174947	W091.2	184324	E075.4
2608A	A	1815	1952	X	X	X	X			X	X	X	2608	193714	W118.1	203052	E048.5
2609A	A	1956	2140	X	X	X	X			X	X		2609	212442	W145.0	221820	E021.7
2610A	A	2145	2329	X	X	X	X			X	X	X	2610	230210	W171.8	000548	W005.2
26100	B	2327	0031					X	X		X	X	X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T H				ASCENDING		DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	I	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	S	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2614R	A	0518	0659	X	X		X	X	X	X			2611	005938	E161.3	015316	W032.1
2615A	A	0703	0843	X	X		X	X	X	X			2612	024706	E134.5	034044	W058.9
2616A	A	0847	1028	X	X		X	X	X	X			2613	043434	E107.6	052811	W085.8
2617A	A	1032	1214	X	X		X	X	X	X			2614	062202	E080.7	071539	W112.7
2618A	A	1218	1400	X	X		X	X	X	X			2615	080930	E053.8	090307	W139.5
2619A	A	1404	1544	X	X		X	X	X	X			2616	095658	E027.0	105035	W166.4
2620A	A	1549	1727	X	X		X	X	X	X			2617	114426	E000.2	123803	E166.7
2621A	A	1731	1912	X	X		X	X	X	X			2618	133154	W026.7	142531	E139.9
2622A	A	1916	2059	X	X		X	X	X	X			2619	151922	W053.6	161259	E113.0
2623A	A	2103	2244	X	X		X	X	X	X			2620	170650	W080.5	180027	E086.1
26240	B	2243	2346				X	X	X	X			2621	185418	W107.3	194755	E059.3
													2622	204146	W134.2	213523	E032.4
													2623	222914	W161.1	232251	E005.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING		DESCENDING		
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
26240	A	2347	0145					X	X	X	X	2625	020410	E145.2	025747	W048.2
2626R	B	0334	0436	X	X			X	X	X	X	2626	035138	E118.3	044515	W075.1
2627R	A	0433	0618	X	X			X	X	X	X	2627	053906	E091.5	063243	W101.9
2628A	A	0622	0758	X	X			X	X	X	X	2628	072634	E064.6	082011	W128.8
2629A	A	0802	0944	X	X			X	X	X	X	2629	091402	E037.7	100739	W155.7
2630A	A	0948	1134	X	X			X	X	X	X	2630	110130	E010.9	115507	E177.5
2631A	A	1138	1319	X	X			X	X	X	X	2631	124858	W016.0	134235	E150.6
2632A	A	1324	1503	X	X			X	X	X	X	2632	143626	W042.9	153003	E123.7
2633A	A	1507	1645	X	X			X	X	X	X	2633	162354	W069.8	171731	E096.9
2634A	A	1649	1829	X	X			X	X	X	X	2634	181122	W096.6	190459	E070.0
2635A	A	1833	2015	X	X			X	X	X	X	2635	195850	W123.5	205227	E043.1
2636A	A	2020	2204	X	X			X	X	X	X	2636	214618	W150.3	223955	E016.3
2637A	A	2208	2351	X	X			X	X	X	X	2637	233346	W177.2	002723	W010.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E	T	H	ASCENDING		DESCENDING			
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE		
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG	
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	ORBIT	HRMNSS	DEGREE	HRMNSS	DEGREE
2639R	A	0114	0249	X	X			X	X	X	X	2638	012114	E155.9	021451	W037.5
2640R	B	0251	0356	X	X			X	X	X	X	2639	030842	E129.1	040219	W064.4
2640R	A	0356	0534	X	X			X	X	X	X	2640	045610	E102.2	054947	W091.2
2641R	A	0538	0722	X	X			X	X	X	X	2641	064338	E075.3	073715	W118.1
2642A	A	0726	0903	X	X			X	X	X	X	2642	083106	E048.5	092443	W144.9
2643A	A	0908	1048	X	X			X	X	X	X	2643	101834	E021.6	111211	W171.8
2644A	A	1053	1236	X	X			X	X	X	X	2644	120602	W005.3	125939	E161.3
2645A	A	1240	1421	X	X			X	X	X	X	2645	135330	W032.1	144707	E134.5
2646A	A	1425	1604	X	X			X	X	X	X	2646	154058	W059.0	163435	E107.6
2647A	A	1608	1750	X	X			X	X	X	X	2647	172826	W085.9	182203	E080.7
2648A	A	1754	1934	X	X			X	X	X	X	2648	191554	W112.7	200931	E053.9
2649A	A	1938	2121	X	X			X	X	X	X	2649	210322	W139.6	215659	E027.0
2650A	A	2125	2307	X	X			X	X	X	X	2650	225050	W166.5	234428	E000.1
26500	B	2304	0007					X	X	X	X					

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
26510	A	0007 0205					X X		X X		2651	003818 E166.7	013156 W026.7
2653R	A	0216 0359	X X				X X		X X		2652	022546 E139.8	031924 W053.6
2653R	B	0358 0456	X X				X X		X X		2653	041314 E112.9	050652 W080.5
2654R	A	0456 0639	X X				X X		X X		2654	060043 E086.0	065420 W107.4
2655A	A	0643 0820	X X				X X		X X		2655	074811 E059.2	084148 W134.2
2656A	A	0824 1007	X X				X X		X X		2656	093539 E032.3	102916 W161.1
2657A	A	1012 1153	X X				X X		X X		2657	112307 E005.5	121644 E172.1
2658A	A	1158 1337	X X				X X		X X		2658	131035 W021.4	140412 E145.2
2659A	A	1342 1526	X X				X X	X X	X X		2659	145803 W048.3	155140 E118.3
2660A	A	1530 1706	X X				X	X X	X X		2660	164531 W075.2	173908 E091.4
2661A	A	1710 1849	X X				X	X X	X X		2661	183259 W102.0	192636 E064.6
2662A	A	1853 2038	X X				X	X X	X X		2662	202027 W128.9	211404 E037.7
*2663A	A	2221 2233	X X				X	X X	X X		2663	220755 W155.7	230133 E010.9
26640	B	2224 2323					X	X X	X X		2664	235523 E177.4	004901 W016.0
*LRIR + THIR UN AT 2041 OFF AT 2225													

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF HRMN HRMN	L R	T H	T D	S C	E S	P M	W R	I R	DATA ORBIT	ASCENDING NODE TIME LONG HRMNSS DEGREE	DESCENDING NODE TIME LONG HRMNSS DEGREE
26640	A	2324 0122					X		X X X		2665	014252 E150.5	023629 W042.9
26650	A	0132 0312					X		X X X		2666	033020 E123.6	042357 W069.8
2666R	B	0312 0411	X X				X		X X X		2667	051748 E096.8	061125 W096.6
2667R	A	0412 0556	X X				X		X X X		2668	070516 E069.9	075853 W123.5
2668A	A	0602 0740	X X				X		X X X		2669	085244 E043.1	094621 W150.4
2669A	A	0744 0923	X X				X		X X X		2670	104012 E016.2	113349 W177.2
2670A	A	0927 1110	X X				X		X X X		2671	122740 W010.7	132117 E155.9
2671A	A	1114 1255	X X				X		X X X		2672	141508 W037.6	150846 E129.0
2672A	A	1301 1439	X X				X		X X X		2673	160237 W064.4	165614 E102.2
2673A	A	1443 1623	X X				X		X X X		2674	175005 W091.3	184342 E075.3
2674A	A	1628 1811	X X				X		X X X		2675	193733 W118.2	203110 E048.4
2675A	A	1815 1954	X X				X		X X X		2676	212501 W145.0	221838 E021.6
2676A	A	1958 2142	X X				X		X X X		2677	231229 W171.9	000606 W005.3
2677A	A	2146 2329	X X				X		X X X				
26770	B	2327 0009					X		X X X				

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I	T H I	T D R	S C A	E S M	P R B	W M R	I R L	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
26780	A	0031 0229				X	X	X	X		2678	005957	E161.2	015334	W032.2
2680R	A	0239 0422	X	X		X	X	X	X		2679	024725	E134.4	034103	W059.0
2680R	B	0420 0518	X	X		X	X	X	X		2680	043454	E107.5	052831	W085.9
2681R	A	0517 0701	X	X		X	X	X	X		2681	062222	E080.6	071559	W112.8
2682A	A	0705 0841	X	X		X	X	X	X		2682	080950	E053.8	090327	W139.6
2683A	A	0845 1026	X	X		X	X	X	X		2683	095718	E026.9	105055	W166.5
2684A	A	1031 1214	X	X		X	X	X	X		2684	114446	E000.0	123823	E166.6
2685A	A	1218 1321	X	X		X	X	X	X		2685	133214	W026.8	142552	E139.8
2686A	A	1403 1545	X	X		X	X	X	X		2686	151943	W053.7	161320	E112.9
2687A	A	1549 1730	X	X		X	X	X	X		2687	170711	W080.6	180048	E086.0
2688A	A	1734 1914	X	X		X	X	X	X		2688	185439	W107.4	194816	E059.2
2689A	A	1918 2101	X	X		X	X	X	X		2689	204207	W134.3	213544	E032.3
2690A	A	2106 2246	X	X		X	X	X	X		2690	222935	W161.2	232313	E005.4
26910	B	2244 2346				X	X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 DECEMBER 1975

INT ORBIT AND STDN	H D R S	HDRSS TIME ON OFF	L R I	T H I	T D R	S C A	E S M	P R B	W M R	I R L	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
26910	A	2347 0144				X	X	X	X		2691	001704	E172.0	011041	W021.4
26920	A	0154 0334				X	X	X	X		2692	020432	E145.1	025809	W048.3
2693R	B	0334 0433	X	X		X	X	X	X		2693	035200	E118.2	044537	W075.2
2694R	A	0431 0618	X	X		X	X	X	X		2694	053922	E091.4	063259	W102.0
2695A	A	0623 0759	X	X		X	X	X	X		2695	072650	E064.5	082027	W128.9
2696A	A	0803 0943	X	X		X	X	X	X		2696	091418	E037.7	100756	W155.8
2697A	A	0947 1129	X	X		X	X	X	X		2697	110147	E010.8	115524	E177.4
2698A	A	1133 1316	X	X		X	X	X	X		2698	124915	W016.1	134252	E150.5
2699A	A	1320 1502	X	X	X	X	X	X	X		2699	143643	W043.0	153020	E123.6
2700A	A	1507 1649	X	X	X	X	X	X	X		2700	162411	W069.8	171748	E096.8
2701A	A	1653 1830	X	X	X	X	X	X	X		2701	181139	W096.7	191516	E069.9
2702A	A	1834 2017	X	X	X	X	X	X	X		2702	195908	W123.6	205244	E043.1
2703A	A	2022 2203	X	X		X	X	X	X		2703	214636	W150.4	224013	E016.2
27050	B	2213 2304				X	X	X	X		2704	233404	W177.3	002741	W010.7
27040	A	2305 0103				X	X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
31 DECEMBER 1975

INT	H	HDRSS		L	T	T	S	E		T	H	ASCENDING		DESCENDING	
ORBIT	D	TIME		R	H	D	C	S	E	P	W	NODE		NODE	
AND	R	ON	OFF	I	I	R	A	M	R	M	R	TIME	LONG	TIME	LONG
STDN	S	HRMN	HRMN	R	R	E	M	R	B	R	L	HRMNSS	DEGREE	HRMNSS	DEGREE
27050	A	0115	0252					X	X		X	2705	012132	E155.9	021509 W037.6
2707R	A	0257	0431	X	X			X	X		X	2706	030901	E129.0	040238 W064.5
2707R	B	0430	0532	X	X			X	X		X	2707	045629	E102.1	055006 W091.3
2708R	A	0538	0722	X	X			X	X		X	2708	064357	E075.2	073734 W118.2
2709A	A	0726	0902	X	X			X	X		X	2709	083125	E048.4	092502 W145.0
2710A	A	0906	1049	X	X			X	X		X	2710	101853	E021.5	111230 W171.9
2711A	A	1053	1235	X	X			X	X		X	2711	120622	W005.4	125959 E161.2
2712A	A	1239	1423	X	X			X	X	X	X	2712	135350	W032.2	144727 E134.4
2713A	A	1427	1607	X	X			X		X	X	2713	154118	W059.1	163455 E107.5
2714A	A	1611	1750	X	X			X		X	X	2714	172846	W086.0	182223 E080.6
2715A	A	1755	1934	X	X			X		X	X	2715	191615	W112.8	200952 E053.8
2716A	A	1938	2120	X	X			X		X	X	2716	210343	W139.7	215720 E026.9
2717A	A	2124	2308	X	X			X		X	X	2717	225111	W166.6	234448 E000.0

SECTION 3

ORBIT DISPLAYS OF HIRS, SCAMS, AND ESMR

This section briefly describes the HIRS, SCAMS and ESMR experiments, explains the formats of the image displays derived from the data of these three experiments, and presents image examples from each of them. Complete descriptions of the HIRS, SCAMS and ESMR experiments are found in Sections 3, 4, and 5, respectively, of The Nimbus 6 User's Guide.

The HIRS is a 17-channel radiometer. Sixteen channels have central wavelengths between $3.7 \mu\text{m}$ and $15 \mu\text{m}$, and one is centered at $0.69 \mu\text{m}$ to measure reflected sunlight. Spatial resolution at the nadir on the earth's surface is about 25 km (13 n. m.).

The SCAMS is a 5-channel scanning radiometer. Channel 1 lies on a water vapor line near 22 GHz. Channel 2 is on an atmospheric window near 32 GHz. Channels 3, 4, and 5 are within the oxygen band near 54 GHz. Spatial resolution varies from about 145 km (80 n. m.) near nadir to about 330 km (180 n. m.) at the scan limits.

The ESMR is a two-channel scanning radiometer receiving microwave radiation in a 250 MHz band centered at 37 GHz. One channel is used to measure the vertical polarization of the radiation, and the other measures the horizontal polarization. The antenna beam scans ahead of the spacecraft along a conical surface with a constant angle of 45 degrees with respect to the antenna axis. Spatial resolution of each element is about 20 km in the cross-track direction by 45 km in the direction parallel to the subpoint track.

All HIRS, SCAMS, and ESMR data are converted to $4'' \times 5''$ black and white images. Selected images from each experiment from November and December 1975 are presented in this section. Complete coverage times for each experiment are listed in the Data Availability On-Off Times in Table 2-2.

Sections 3, 4, and 5 of The Nimbus 6 User's Guide describe in detail the image formats of the HIRS, SCAMS, and ESMR. The following is a summary of the format, detailing changes to the Users Guide where needed. Each display contains the following similar items:

- NIMBUS 6 (HIRS, SCAMS, or ESMR)

This identifies the satellite and the experiment

- (DATE)

This identifies the Greenwich month, day, and year the data were recorded on board the satellite.

- SCALE F

All data from the three experiments have been displayed in the F (full-scale) mode. For each experiment the data from each interrogation orbit is displayed on a single image. Each HIRS scan line is displayed once. Each of the 42 scan-spot elements across a scan is displayed four times. Each SCAMS scan line is displayed three times in succession. Each of the 13 scan-spot elements across a scan line is displayed ten times. Each ESMR scan line is displayed twice. Each of the 71 scan-spot elements is displayed once.

- INT ORBIT

The interrogation orbit number identifies the orbit in progress when the recorded data is transmitted to a STDN station. Usually parts of two data orbits are on the same display. The interrogation orbit number will only identify the last orbit of each display.

- TIME (and) SUBPOINT

Satellite time and latitude-longitude information are presented along the vertical line down the center of each display. The line represents the satellite subpoint track, which is located down the center of each of the swaths on each display. Time is GMT with ticks along the left side of the line at each five minute mark (on the five minutes). Time is annotated (hour and minute) every 15 minutes (on the quarter hour).

Subpoint information presents latitude and longitude positions of the satellite subpoint. Each tick mark on the right side of the vertical line is annotated with the subpoint latitude and longitude (to the nearest degree). Latitude is labeled N (north) or S (south). Longitude is labeled E (east) or W (west).

- GRAY SCALE

Each image has an 18-step gray scale along the bottom of the display. The gray scales are used to define parameter value intervals for each image swath of each display by assigning different parameter values to the gray scale for each swath. Tables 3-1 through 3-4 define the parameter values versus gray scale for each HIRS, SCAMS, and ESMR image swath.

Table 3-1

Temperature Range of Gray Scale and Channel of HIRS Data for each Swath
on each HIRS Image Display between Orbits 748 and 2717 (7 August through 31 December 1975)

	Swath Number									
	1	2	3	4	5	6	7	8	9	10
HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
Temperature Range (°K) (black-white)	310-230	310-230	310-270	0-50	100-900	280-210	300-210	300-210	240-185	300-185

*The HIRS channel number is number before the hyphen. The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K). The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display". The 18 steps of the gray scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in μm) of each channel on these displays is: channel 3 = 14.4, 8 = 11.0, 9 = 8.2, 10 = 6.7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3.71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data. Table 3-1 on page 39 in the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels.

Table 3-2

Parameter Value for each Step of the Gray Scale on the SCAMS Image Displays for Parameters
2, 3, 11, 12, and 16 between Orbits 478 and 2717 (17 July through 31 December 1975)

Gray Scale Number	Parameters					
	2 (31.65 GHz T_A) (°K)	3 (52.85 GHz T_A) (°K)	11 (Integrated water vapor) (g/mm ²)	12* (Integrated liquid water) (g/mm ²)	12** (Integrated liquid water) (g/mm ²)	16 (param. 2) minus (param. 3) (°K)
(black) 1	>320	>280	>60	>2.0	>1.5	>10
2	306 - 320	276 - 280	56 - 60	1.9 - 2.0	1.4 - 1.5	08 - 10
3	293 - 306	271 - 276	53 - 56	1.8 - 1.9	1.3 - 1.4	06 - 08
4	279 - 293	267 - 271	49 - 53	1.6 - 1.8	1.2 - 1.3	04 - 06
5	265 - 279	263 - 267	45 - 49	1.5 - 1.6	1.1 - 1.2	02 - 04
6	251 - 265	258 - 263	41 - 45	1.4 - 1.5	1.0 - 1.1	00 - 02
7	238 - 251	254 - 258	38 - 41	1.3 - 1.4	0.9 - 1.0	-02 - 00
8	224 - 238	248 - 254	34 - 38	1.1 - 1.3	0.8 - 0.9	-04(-) - 02
9	210 - 224	245 - 248	30 - 34	1.0 - 1.1	0.7 - 0.8	-06(-) - 04
10	196 - 210	241 - 245	26 - 30	0.9 - 1.0	0.6 - 0.7	-08(-) - 06
11	183 - 196	236 - 241	23 - 26	0.8 - 0.9	0.5 - 0.6	-10(-) - 08
12	169 - 183	232 - 236	19 - 23	0.6 - 0.8	0.4 - 0.5	-12(-) - 10
13	155 - 169	228 - 232	15 - 19	0.5 - 0.6	0.3 - 0.4	-14(-) - 12
14	141 - 155	223 - 228	11 - 15	0.4 - 0.5	0.2 - 0.3	-16(-) - 14
15	128 - 141	219 - 223	08 - 11	0.3 - 0.4	0.1 - 0.2	-18(-) - 16
16	114 - 128	214 - 219	04 - 08	0.1 - 0.3	0.0 - 0.1	-20(-) - 18
17	100 - 114	210 - 214	00 - 04	0.0 - 0.1	-0.1 - 0.0	-22(-) - 20
(white) 18	<100	<210	<00	<0.0	<-0.1	<-22

*valid between orbits 1426 and 2717

**valid between orbits 478 and 1425

Table 3-3

Contour Program Options used for Parameters 13, 14, and 15
on the SCAMS Image Displays between Orbits 426 and 2717
(14 July through 31 December 1975)

Contour options	Parameters			Valid for orbits
	13 Mean temperature between 1000 mb and 500 mb	14 Mean temperature between 500 mb and 250 mb	15 Mean temperature between 250 mb and 100 mb	
Contour interval	4°K	4°K	4°K	426-851 (14 July- 14 August)
Contour thickness	1°K	1°K	1°K	
Contour interval	4°K	4°K	4°K	852-2717 (14 August- 31 December)
Contour thickness	2°K	2°K	2°K	

● 3200

This identifies the computer used to process the data. All data was processed by the Control Data Corporation (CDC) 3200.

While the preceeding format information is similar for HIRS, SCAMS, and ESMR, the swath displays of the data from each experiment are different. Therefore, the following information describes the swath displays for each experiment for this catalog period.

HIRS CHANNEL - RANGE DISPLAYS

Each of the ten swaths on the HIRS displays is described by a "CHANNEL (and) RANGE". The CHANNEL is the HIRS channel number (1 through 17), and the RANGE is the computer program table used to display the data from each channel as temperatures (°K). The CHANNEL-RANGE program used during this catalog period is listed in Table 3-1. The HIRS displays shown in Section 3.1 are examples of the data displayed for each orbit during this period.

The HIRS displays through orbit 1140 (5 September) are similar to the example shown in Volume 2 Section 3.1 for orbit 1114 (3 September). Starting with orbit 1141, however, excessive bit slips began occurring and have continued through the end of this catalog period. These bit slips and increasing HIRS system noise make the imagery after orbit 1140 of limited usefulness. Therefore, only two images are included

Table 3-4

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays
for Orbits 828 through 2717 (13 August through 31 December 1975)
(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T _H)	2 and 12 (T _V)	3 and 13 $\left(\frac{T_H + T_V}{2}\right)$	4 and 14 (T _H)	5 and 15 (T _V)	6 and 16 $\left(\frac{T_H + T_V}{2}\right)$	7 and 17 (T _H)	8 and 18 (T _V)	9 and 19 $\left(\frac{T_H + T_V}{2}\right)$	10 and 20 (T _V - 0.6T _H)
(black) 1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	> 140
2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
16	134-139	174-178	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white) 18	< 130	< 170	< 150	< 190	< 220	< 200	< 240	< 260	< 240	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

to illustrate the effects of these problems on the imagery. (Revised computer processing techniques, to handle these problems, should improve the usefulness of the HIRS digital data - especially from the shortwave and visible channels.)

SCAMS PARAMETER DISPLAYS

The SCAMS displays currently contain eight vertical swaths of data, as shown in the SCAMS figures in Section 3.2. Each swath is labeled with a parameter number. All the displays for this catalog period display the same parameters. All swaths contain the same coverage information, but each contains different spectral or temperature information. The values of the gray scale for each image swath are shown in Table 3-2. The parameter values for the contoured swaths are given in Table 3-3.

Parameters 2, 3, and 16 represent uninverted antenna temperatures. Parameters 2 and 3 represent the antenna temperatures (T_A) for channels 2 (31.65 GHz) and 3 (52.85 GHz). Parameter 16 is the temperature difference between channel 2 and 3.

Parameters 16 and 2 are sensitive to surface characteristics such as ice and snow cover and soil moisture content, as well as the obvious difference in emissivity between land and water. Parameter 3 is principally a measure of lower tropospheric temperature, but is significantly perturbed by surface emissivity and to some extent by atmospheric water vapor and precipitation.

Parameters 11 and 12 represent inverted antenna temperatures. Parameter 11 portrays the integrated atmospheric water vapor and parameter 12 portrays the integrated liquid water from clouds or precipitation. These two parameters are valid only over the oceans. Only SCAMS channels 1 and 2 were used to estimate these two parameters. The data is inverted by a statistical method and the parameters are computed by linear operations on the antenna temperatures for each scan angle separately.

Parameters 13, 14, and 15 are mean temperatures (averaged over the logarithm of pressure) for the atmospheric layers between 1000 mb and 500 mb, 500 mb and 250 mb, and 250 mb and 100 mb, respectively. These temperatures are displayed by contour bands. The bands are spaced 4 degrees K apart, with alternate bands a darker shade of gray (although in some cases problems in photographic processing caused both shades to be saturated white). Prior to orbit 852, (14 August) the bands were approximately 1 degree thick. After this orbit, the thickness was increased to about 2 degrees, so that contour boundaries (between black and gray or white) are evenly spaced at about 2 degree intervals. Each band is labeled, space permitting, with the lowest temperature value within it, i. e., its lower boundary. Prior to orbit 778, (9 August) parameters 13, 14, and 15 were estimated using only the data from SCAMS channels 3, 4, and 5. The coefficients used in the calculations were determined under the assumption of an ocean surface, so the resulting values were incorrect over land. Starting with orbit 778, channels 1 and 2 were also incorporated into the inversion to correct for the effects of surface emissivity and water vapor. However, there is no correction for surface elevation, so mountains and plateaus still introduce errors in the estimated values.

ESMR CHANNEL - RANGE DISPLAYS

The ESMR displays contain 20 swaths of data, as shown in the ESMR figures in Section 3.3. Swath number 1 is on the far left, with the swath numbers incrementing to swath number 20 on the far right. The left set of ten swaths and their SUBPOINT-TIME line have the same geographic coverage. However, each swath displays either horizontally or vertically polarized data and a temperature range as listed in Table 3-4. The right set of ten swaths and their SUBPOINT-TIME line have a similar format. The right ten swaths display the earliest recorded data. If these swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. While the geographic coverage is different for each set of ten swaths, the temperature and polarization information are similar. That is, the temperature range and the polarization for swath 1 are the same as for swath 11; similarly, swaths 2 and 12 are the same, etc. Table 3-4 is set up to show this duplication.

SECTION 3.1

SELECTED HIRS IMAGE DISPLAYS

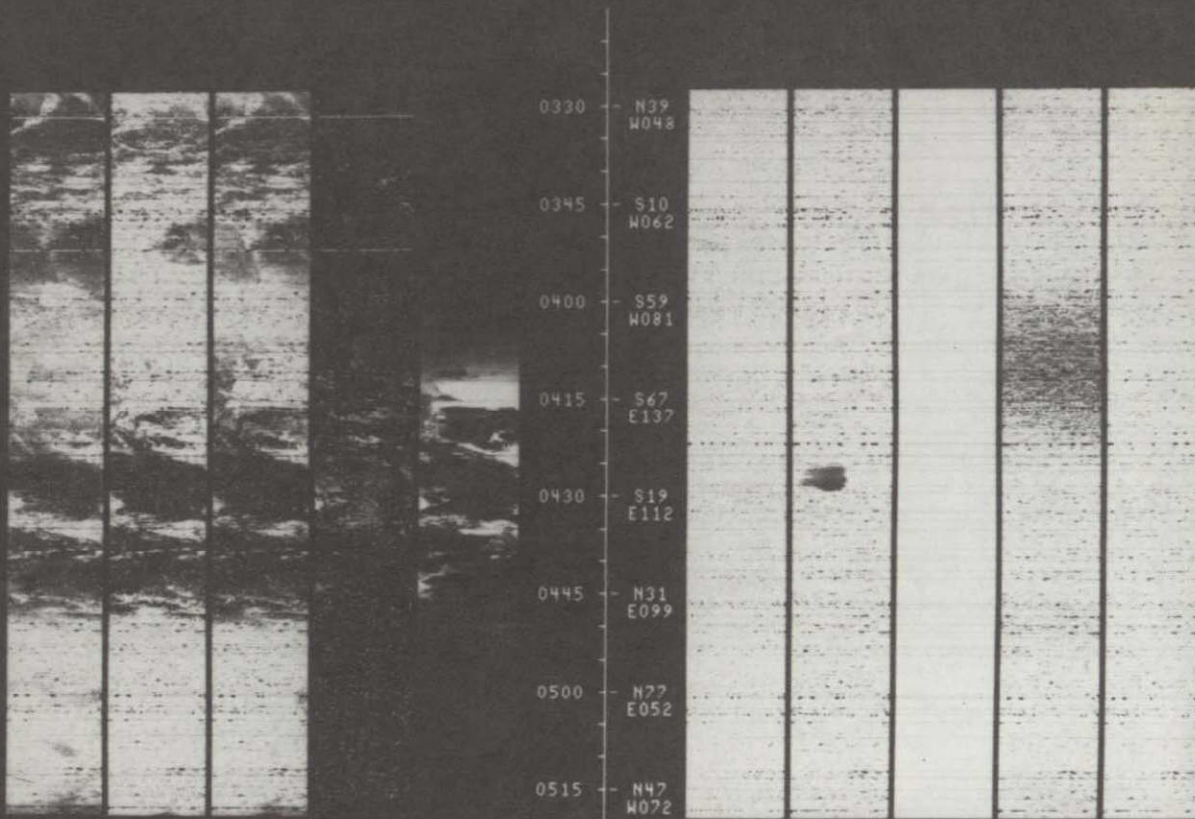
Only two displays of HIRS are shown here. Because of an instrument problem, displays after orbit 1140 (5 September) have limited usefulness. These displays are presented as examples of the information available in displays for orbits after 1140.

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NIMBUS 6-HIRS 12-04-75 SCALE-F INT ORBIT 002345

CHANNEL-RANGE 3200

08-08 16-16 16-21 18-18 17-17 TIME SUB POINT 10-10 12-12 14-14 03-03 15-15

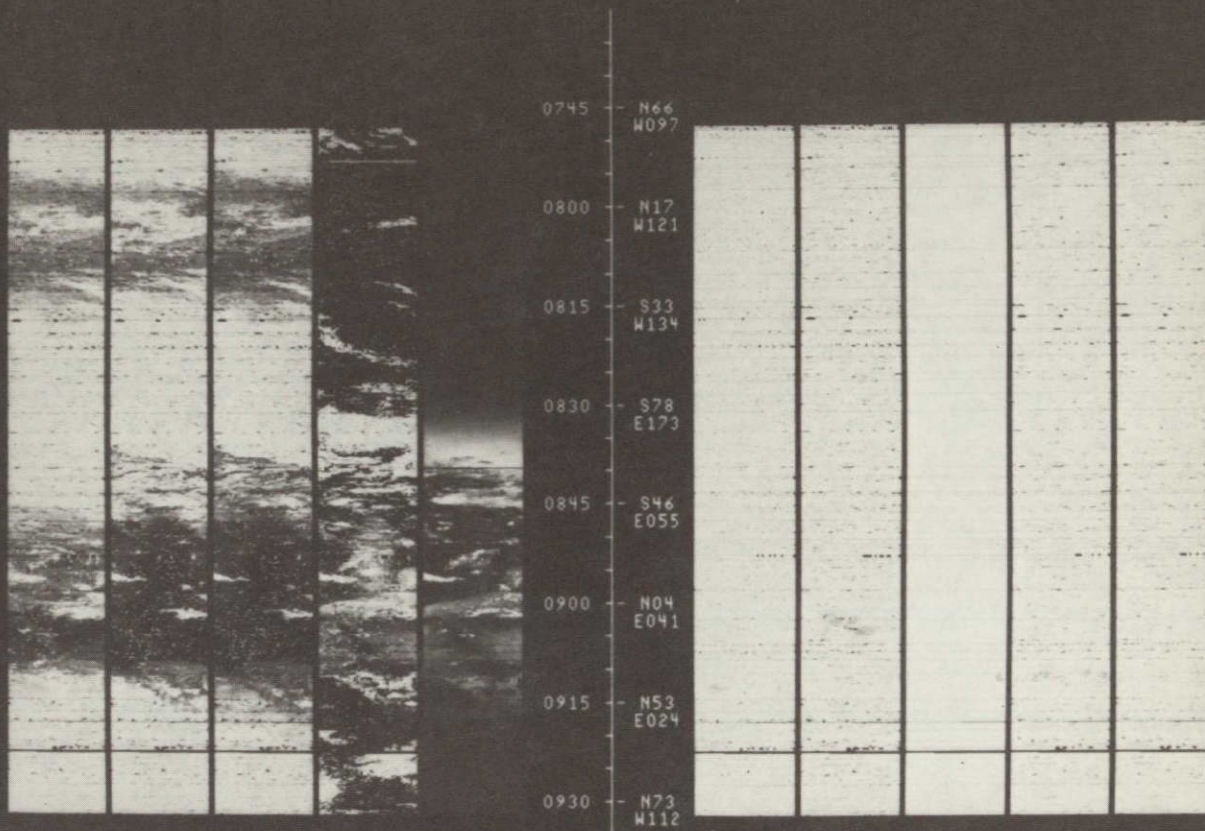


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

HIMBUS 6-HIRS 11-13-75 SCALE-F INT. ORBIT 002066

CHANNEL-RANGE 3200

08-08 16-16 16-21 18-18 17-17 TIME SUB POINT 10-10 12-12 14-14 03-03 15-15



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SECTION 3.2

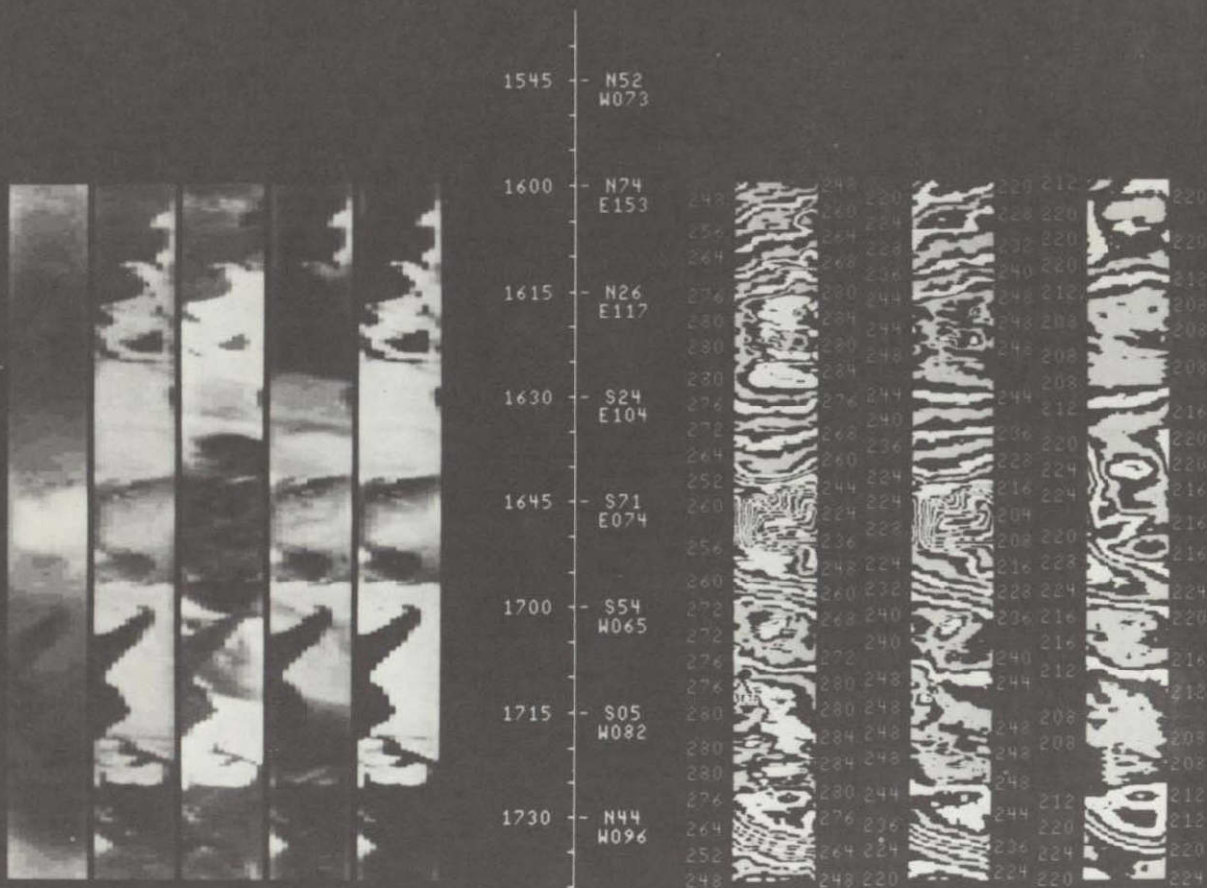
SELECTED SCAMS IMAGE DISPLAYS

(The same orbits of ESMR images are shown in Section 3.3).

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NIMBUS 6-SCAMS 11-04-75 SCALE-F INT. ORBIT 001950
 PARAMETER 3200

03 02 16 11 12 TIME SUB POINT 13 00 14 00 15



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

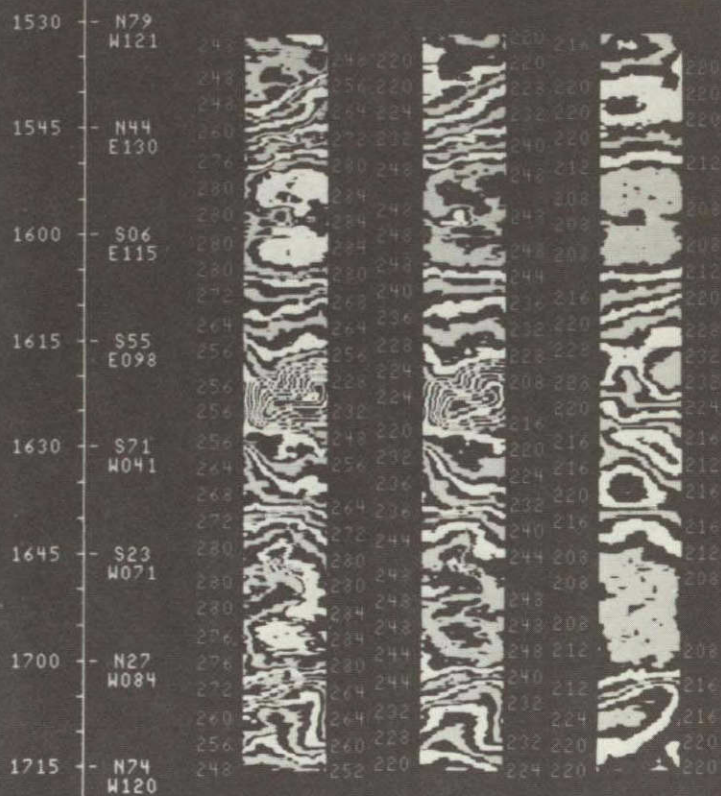
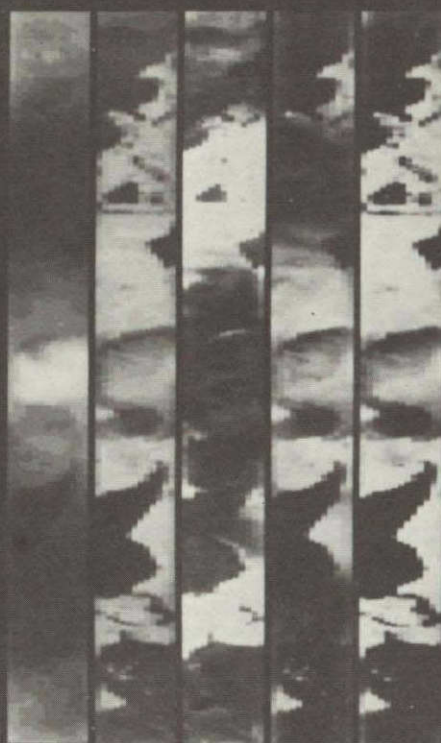
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NIMBUS 6-SCAMS 11-12-75 SCALE-F INT ORBIT 002057
 PARAMETER 3200

03 02 16 11 12

TIME SUB
 POINT

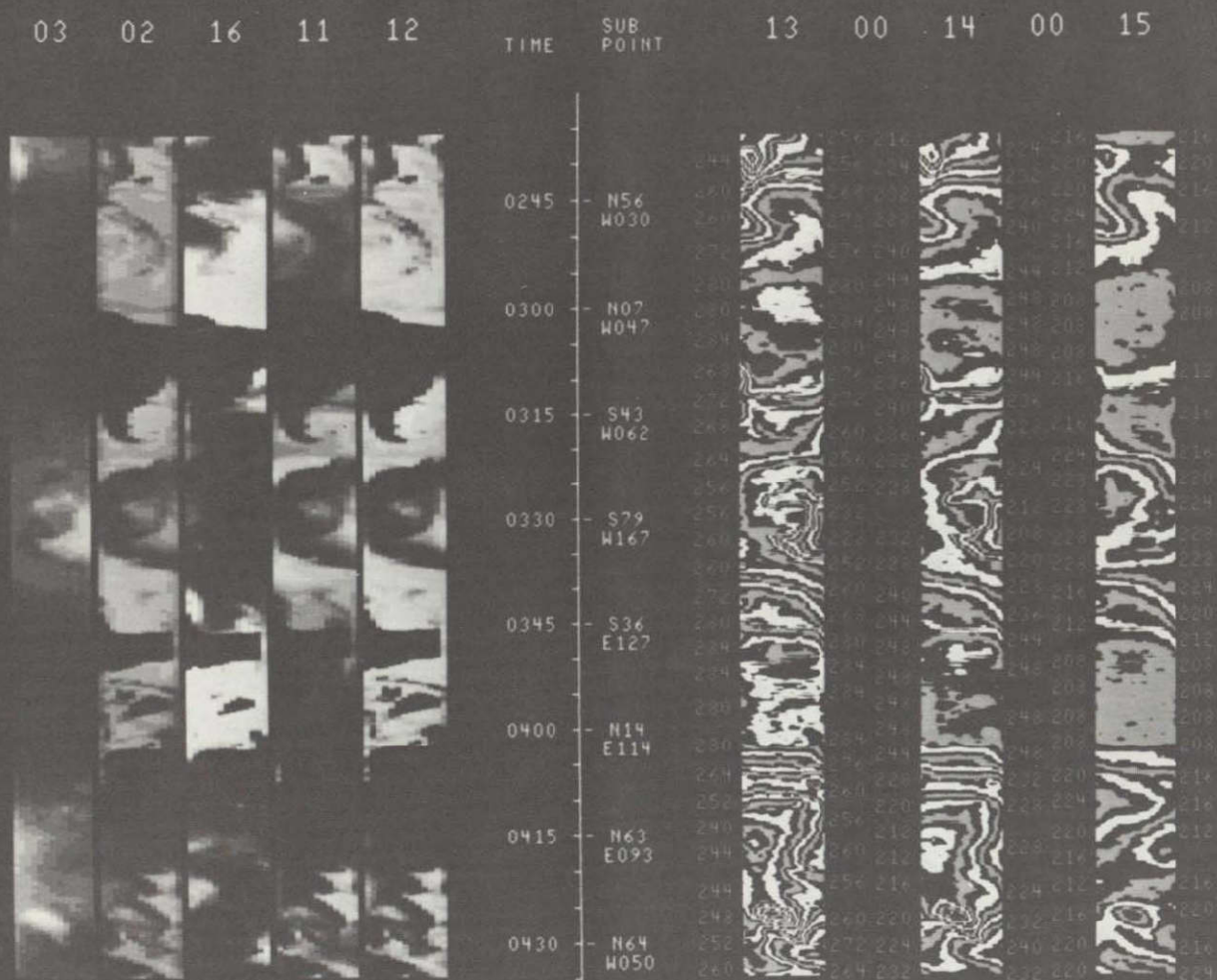
13 00 14 00 15



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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NIMBUS 6-SCAMS 11-20-75 SCALE-F INT. ORBIT 002157
 PARAMETER 3200

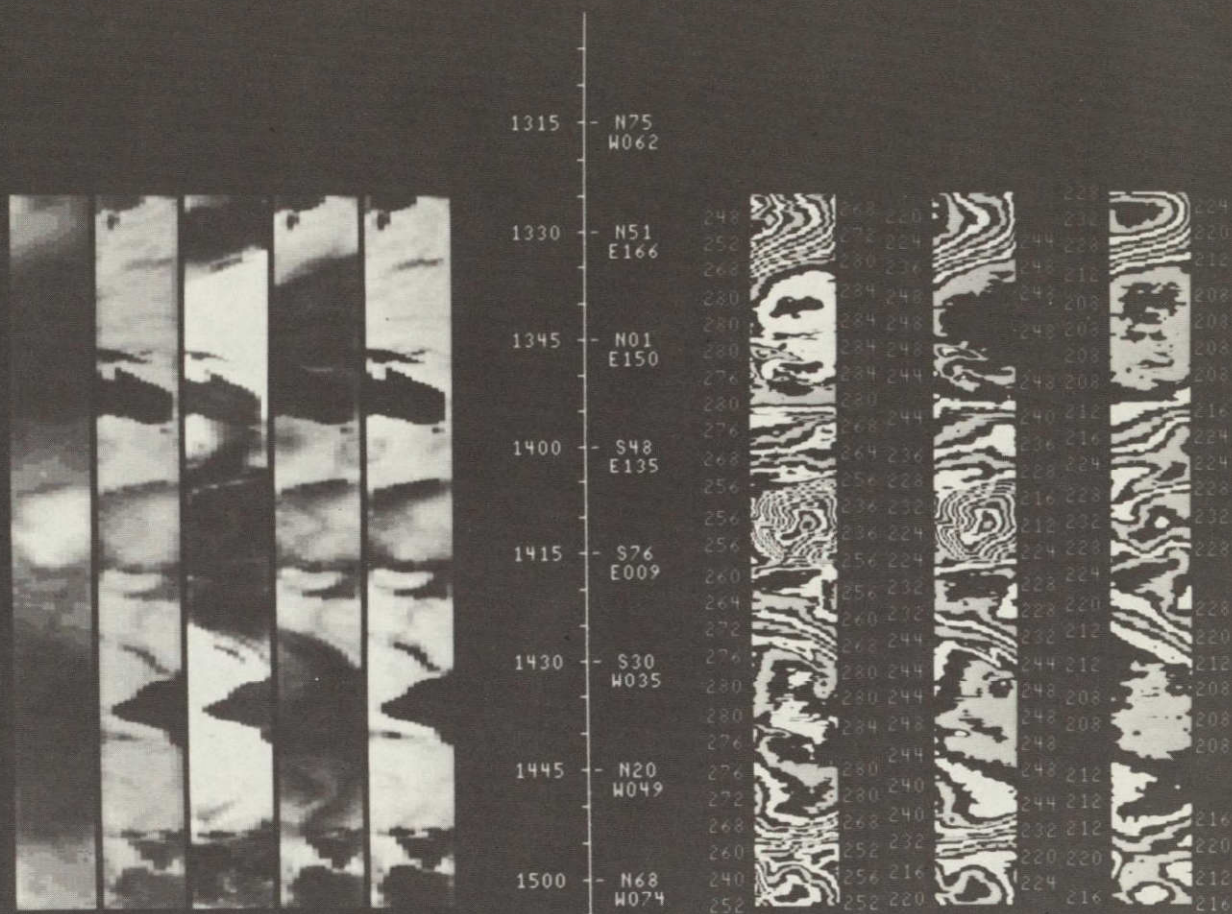


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NIMBUS 6-SCAMS 11-25-75 SCALE-F INT. ORBIT 002230

PARAMETER 3200

03 02 16 11 12 TIME SUB POINT 13 00 14 00 15



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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NIMBUS 6-SCAMS 12-03-75 SCALE-F INT. ORBIT 002334
 PARAMETER 3200

03 02 16 11 12

TIME SUB
 POINT

13 00 14 00 15



0730 N76
 E021

0745 N49
 W108

0800 S00
 W124

0815 S50
 W139

0830 S75
 E091

0845 S29
 E050

0900 N21
 E037

0915 N69
 E010



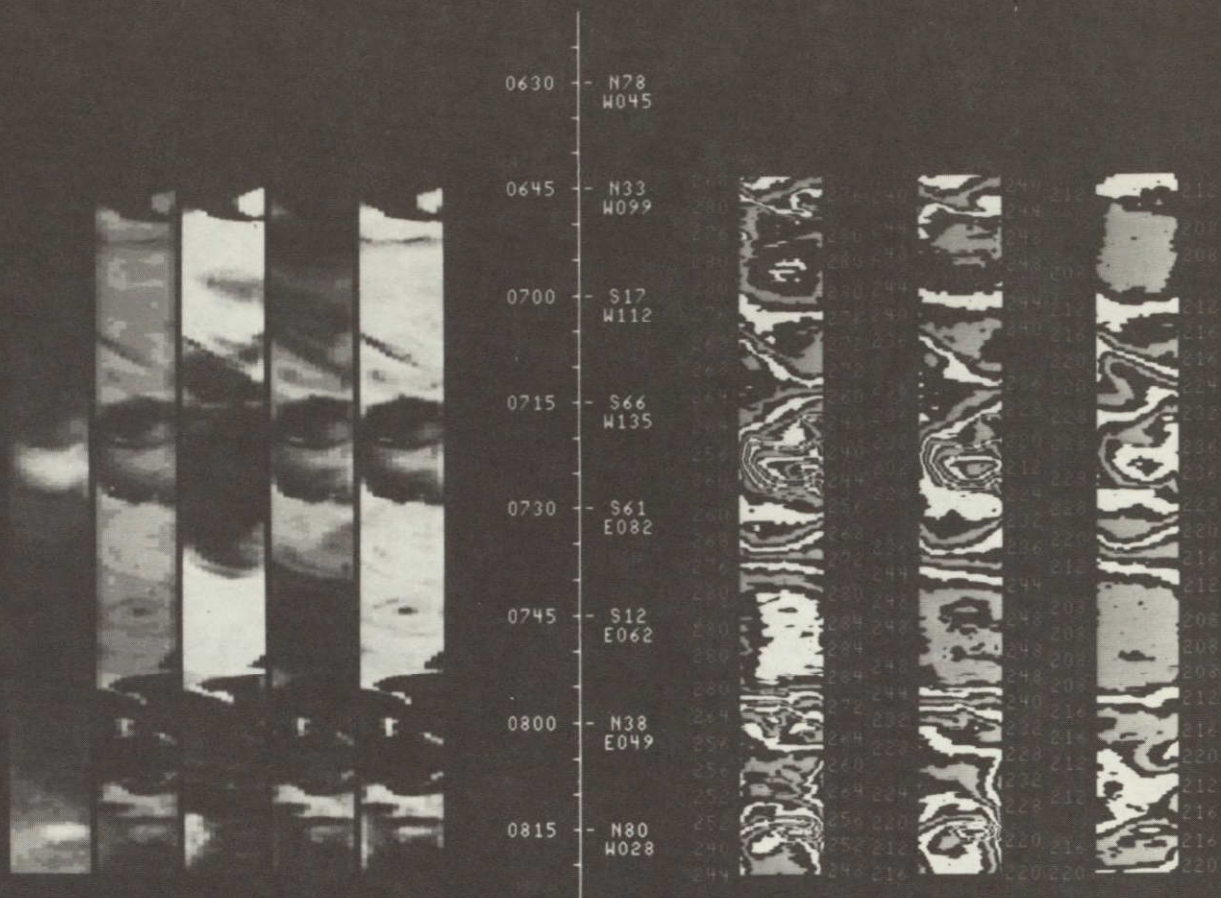
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NIMBUS 6-SCAMS 12-07-75 SCALE-F INT. ORBIT 002387
 PARAMETER 3200

03 02 16 11 12

TIME SUB
POINT

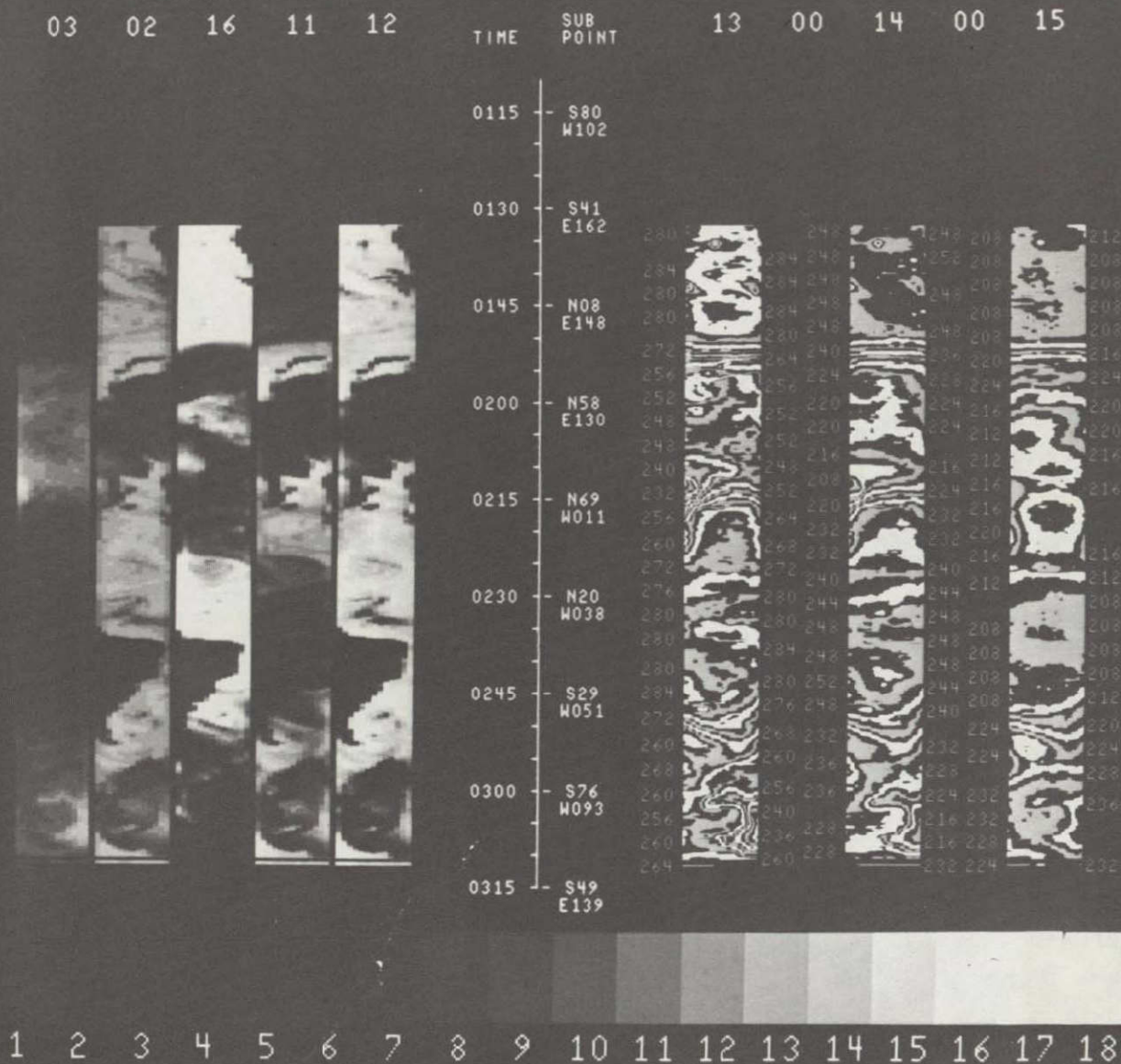
13 00 14 00 15



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

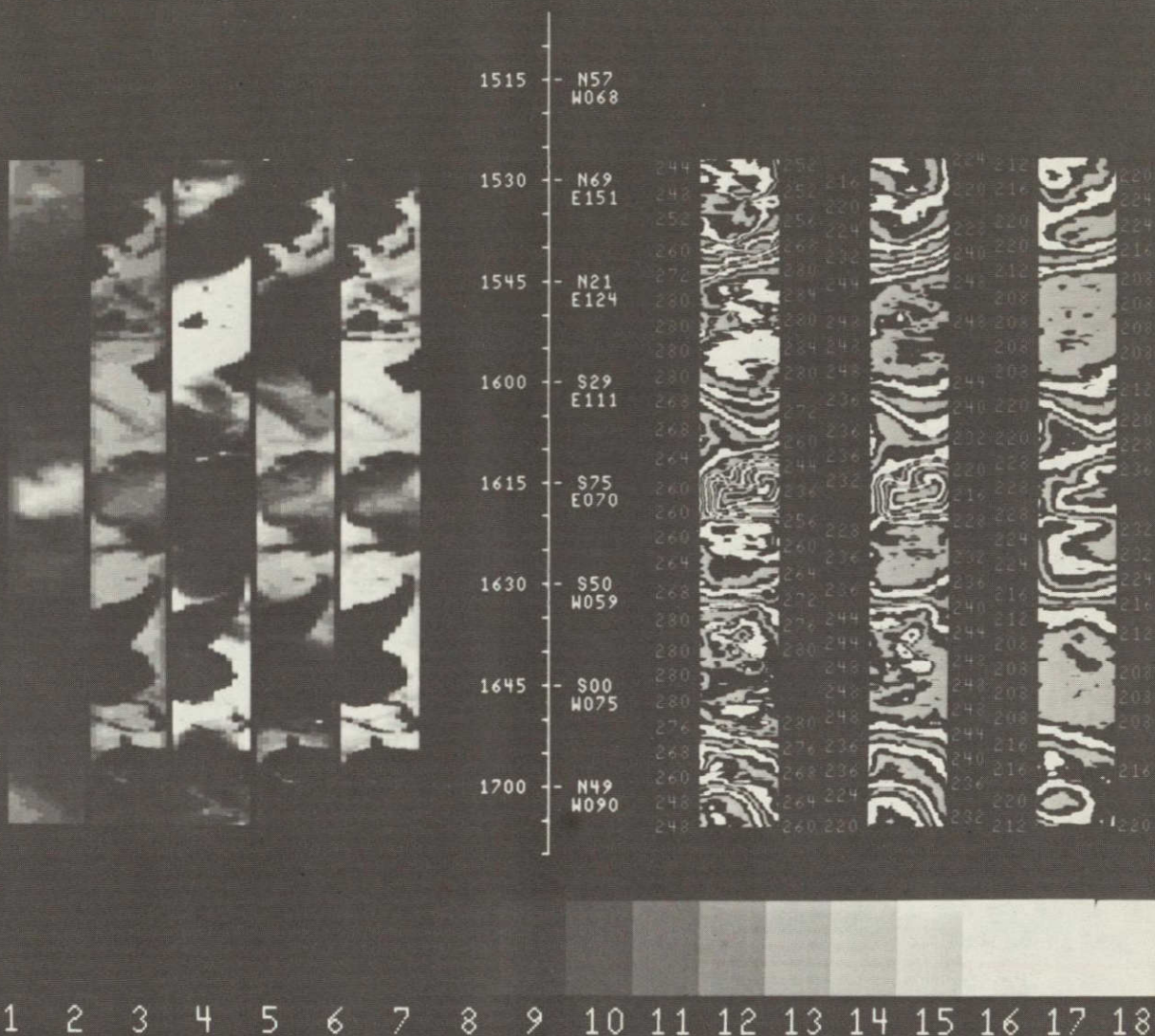
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NIMBUS 6-SCAMS 12-18-75 SCALE-F INT. ORBIT 002531
 PARAMETER 3200



NIMBUS 6-SCAMS 12-22-75 SCALE-F INT. ORBIT 002593
 PARAMETER 3200

03 02 16 11 12 TIME SUB POINT 13 00 14 00 15



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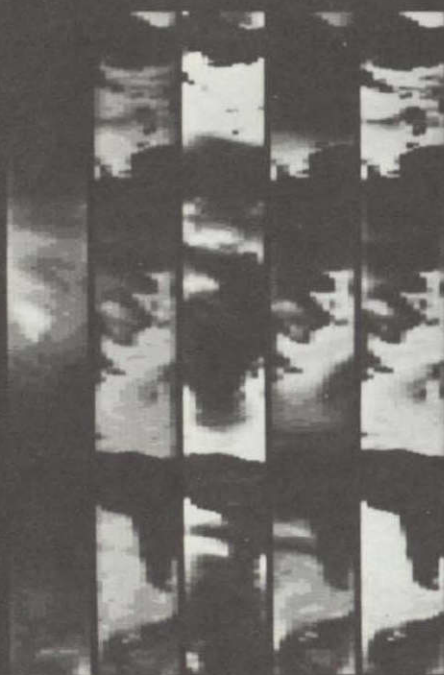
NIMBUS 6-SCAMS 12-31-75 SCALE-F INT. ORBIT 002707

PARAMETER 3200

03 02 16 11 12

TIME SUB
POINT

13 00 14 00 15



0245 S76
E180

0300 S30
E137

0315 N20
E124

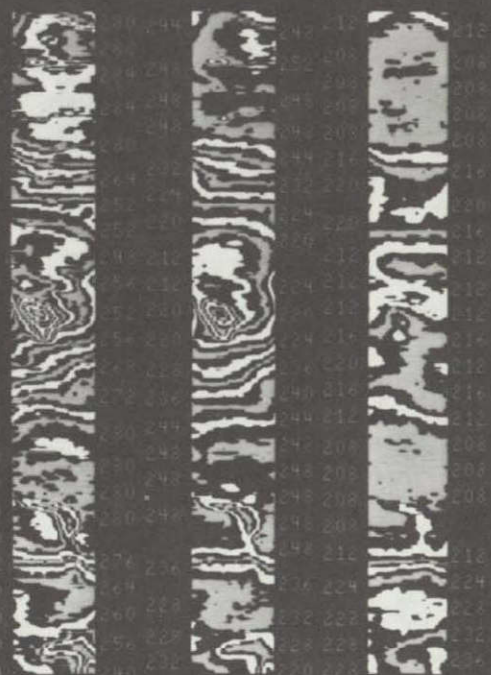
0330 N68
E098

0345 N58
W044

0400 N09
W062

0415 S41
W076

0430 S80
W170



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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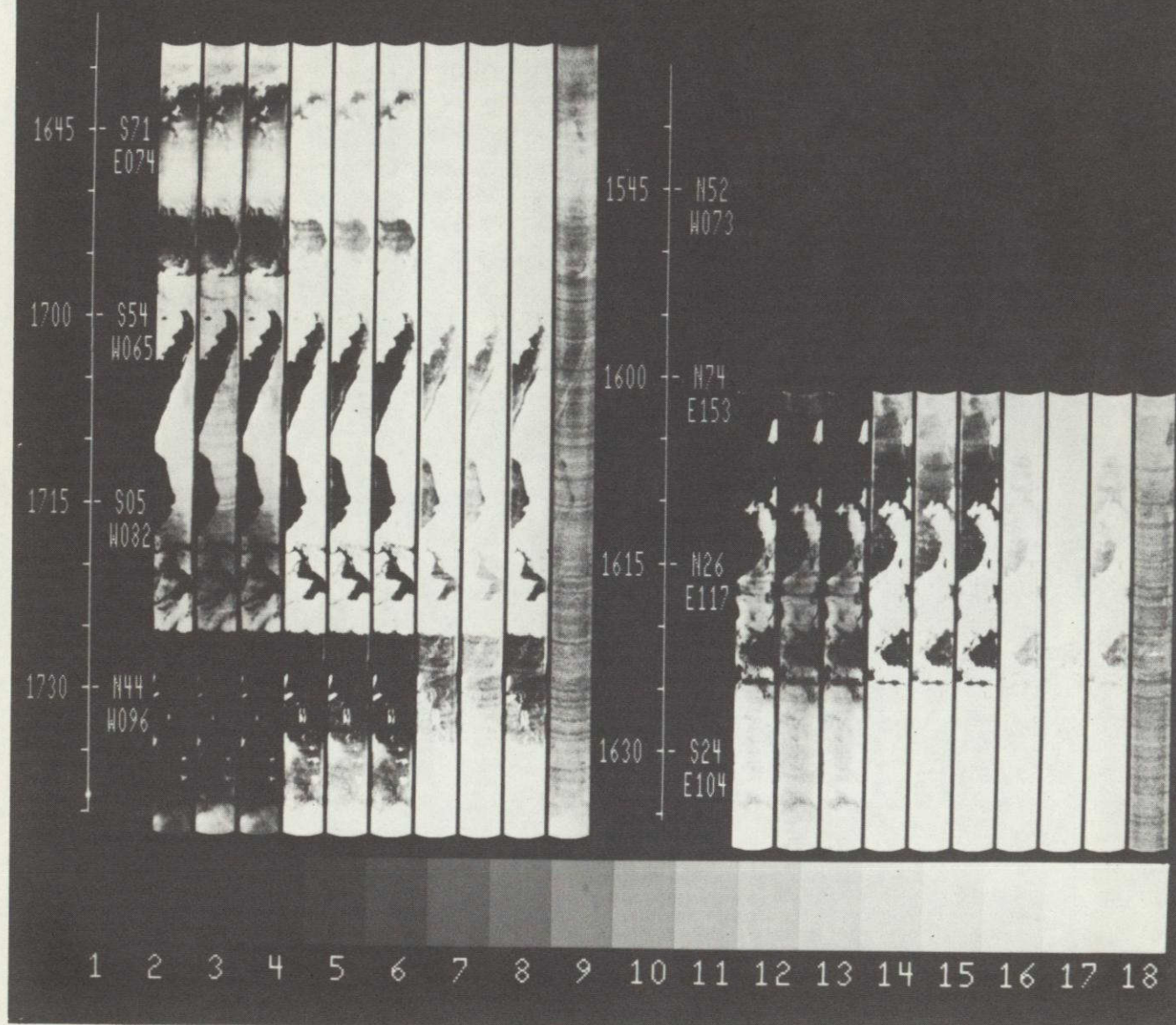
SECTION 3.3

SELECTED ESMR IMAGE DISPLAYS

(The same orbits of SCAMS images are shown in Section 3.2.)

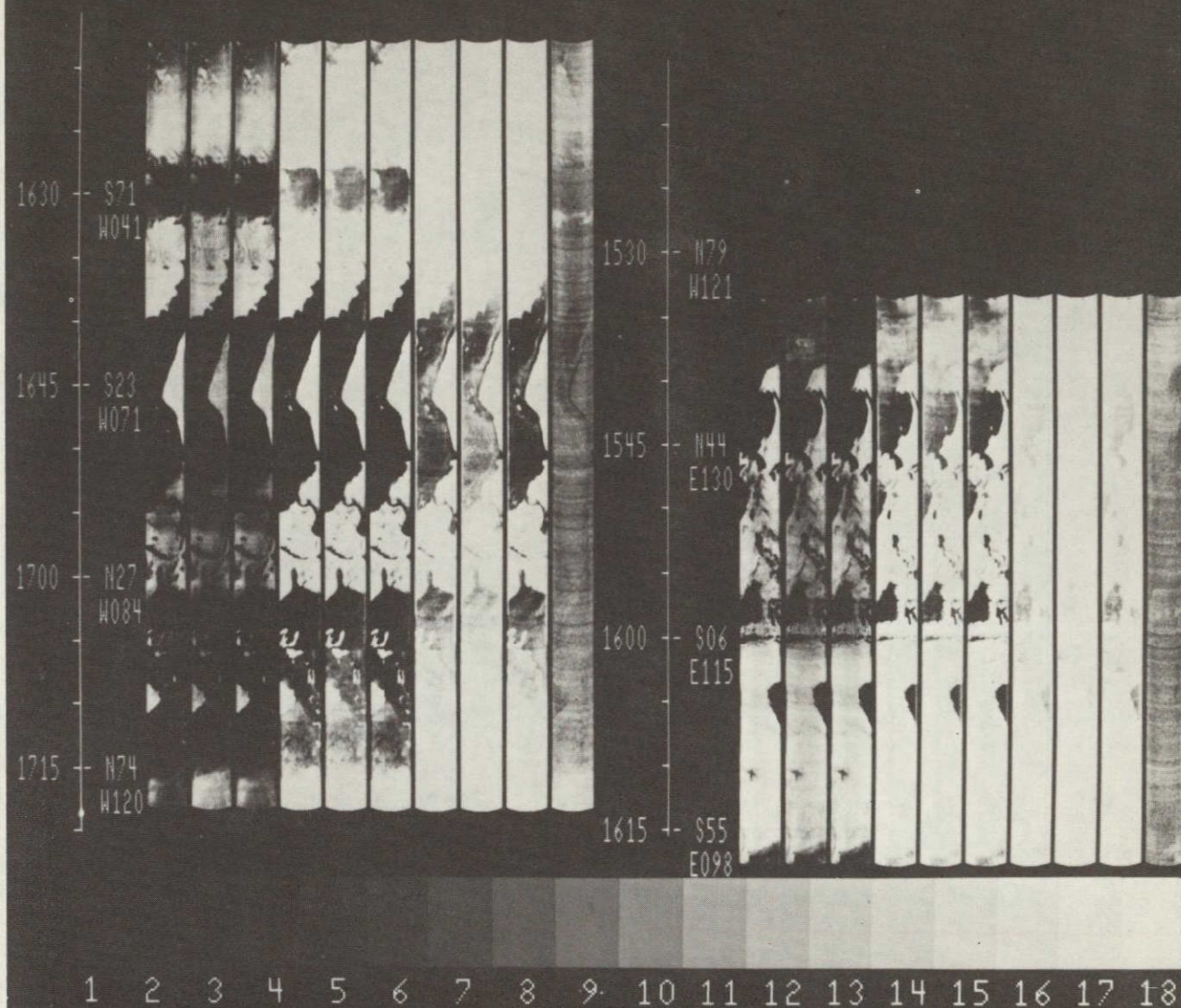
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NIMBUS 6-ESMR 11-04-75 SCALE-F INT. ORBIT 001950
3200



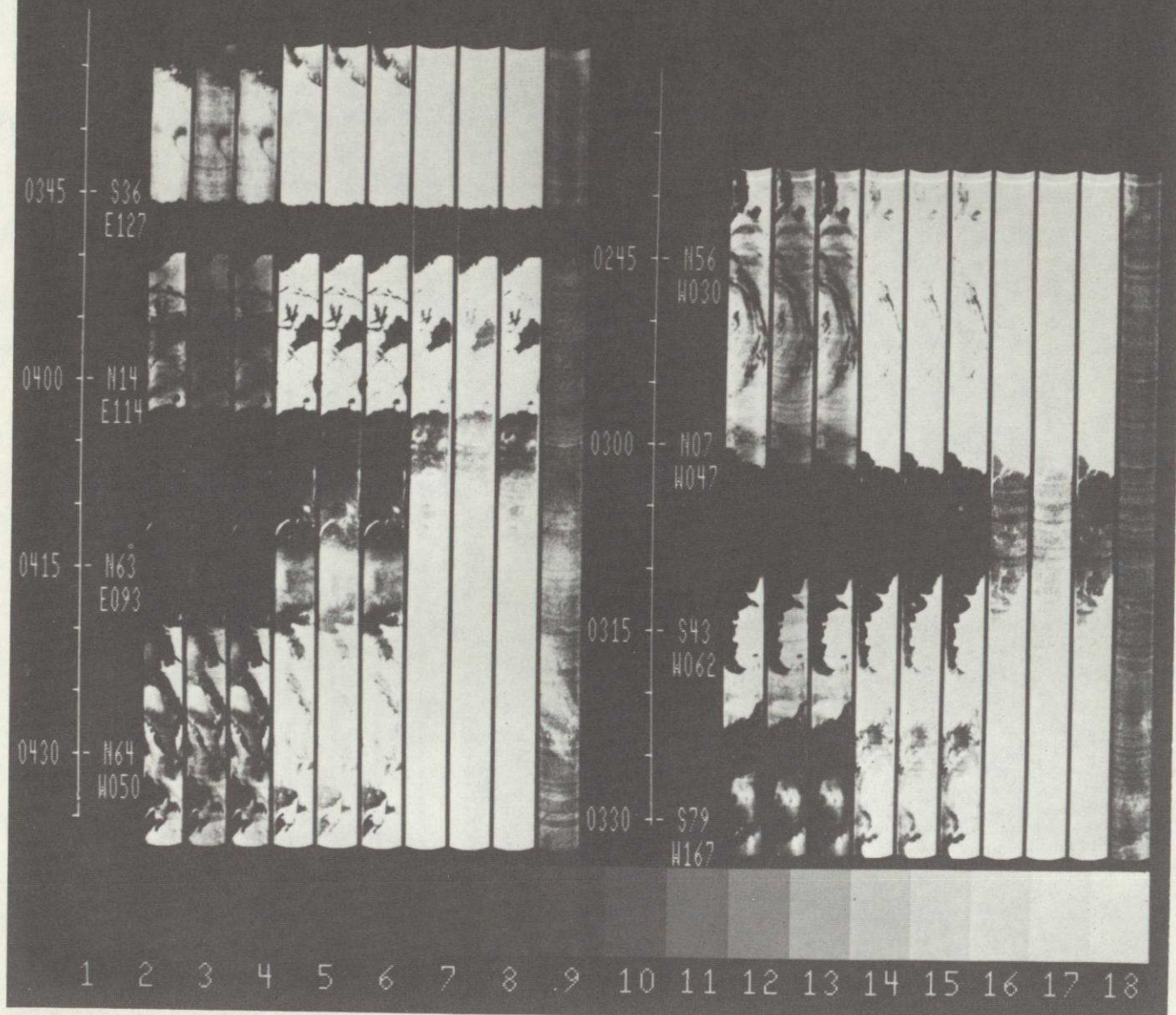
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NIMBUS 6-ESMR 11-12-75 SCALE-F INT. ORBIT 002057
3200

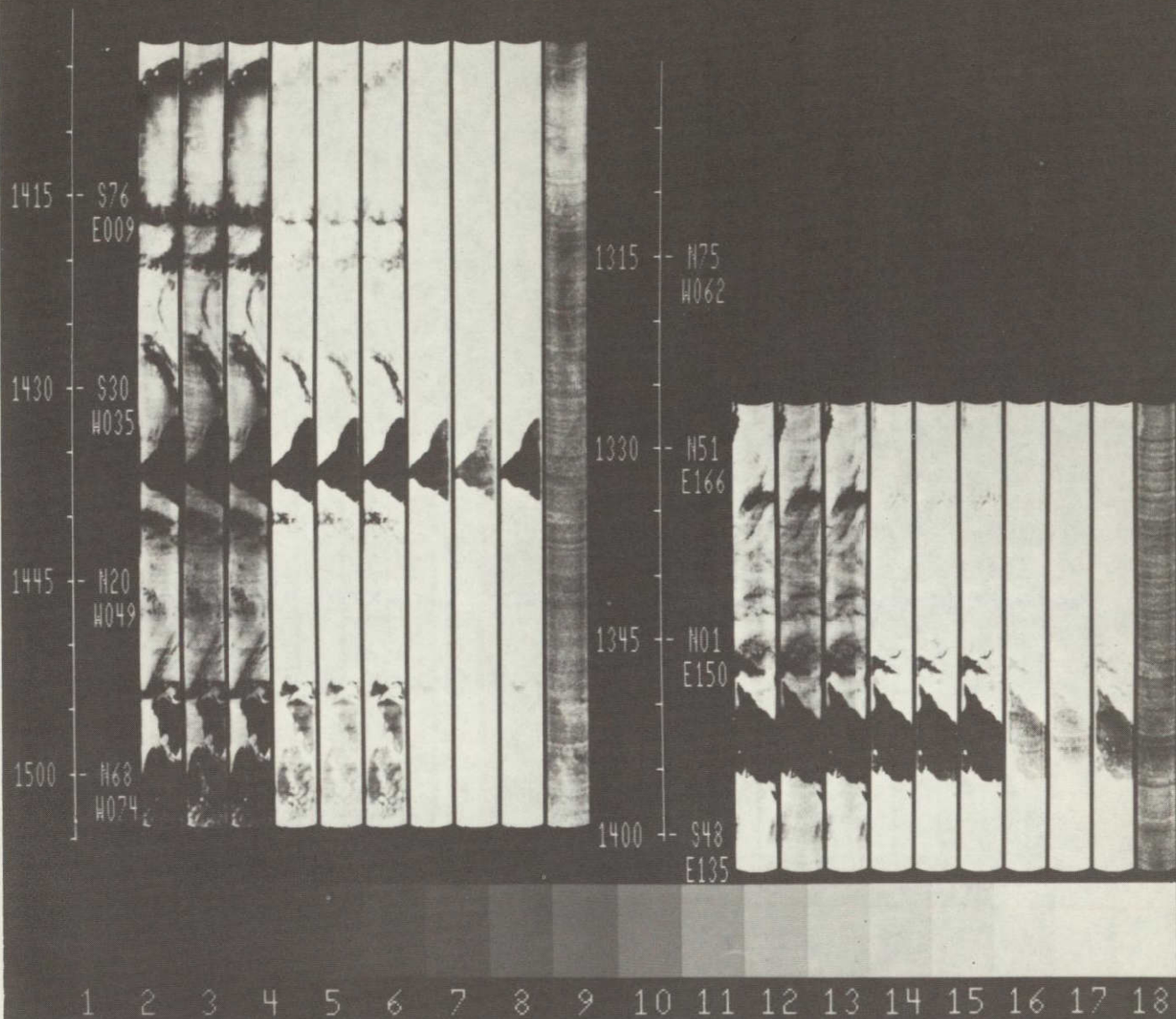


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HIMBUS 6-ESMR 11-20-75 SCALE-F INT. ORBIT 002157
3200

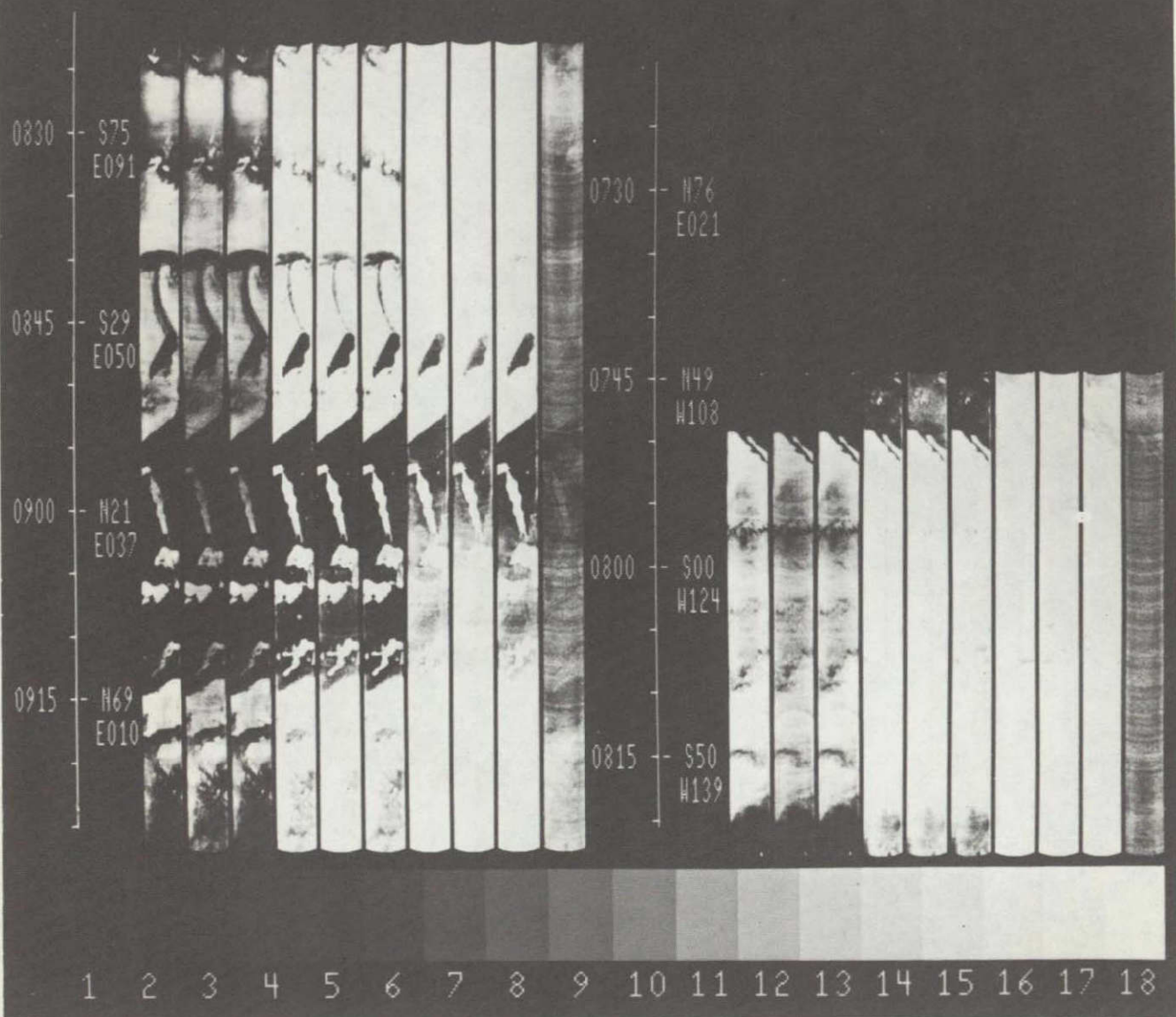


NIMBUS 6-ESMR 11-25-75 SCALE-F INT. ORBIT 002230
3200

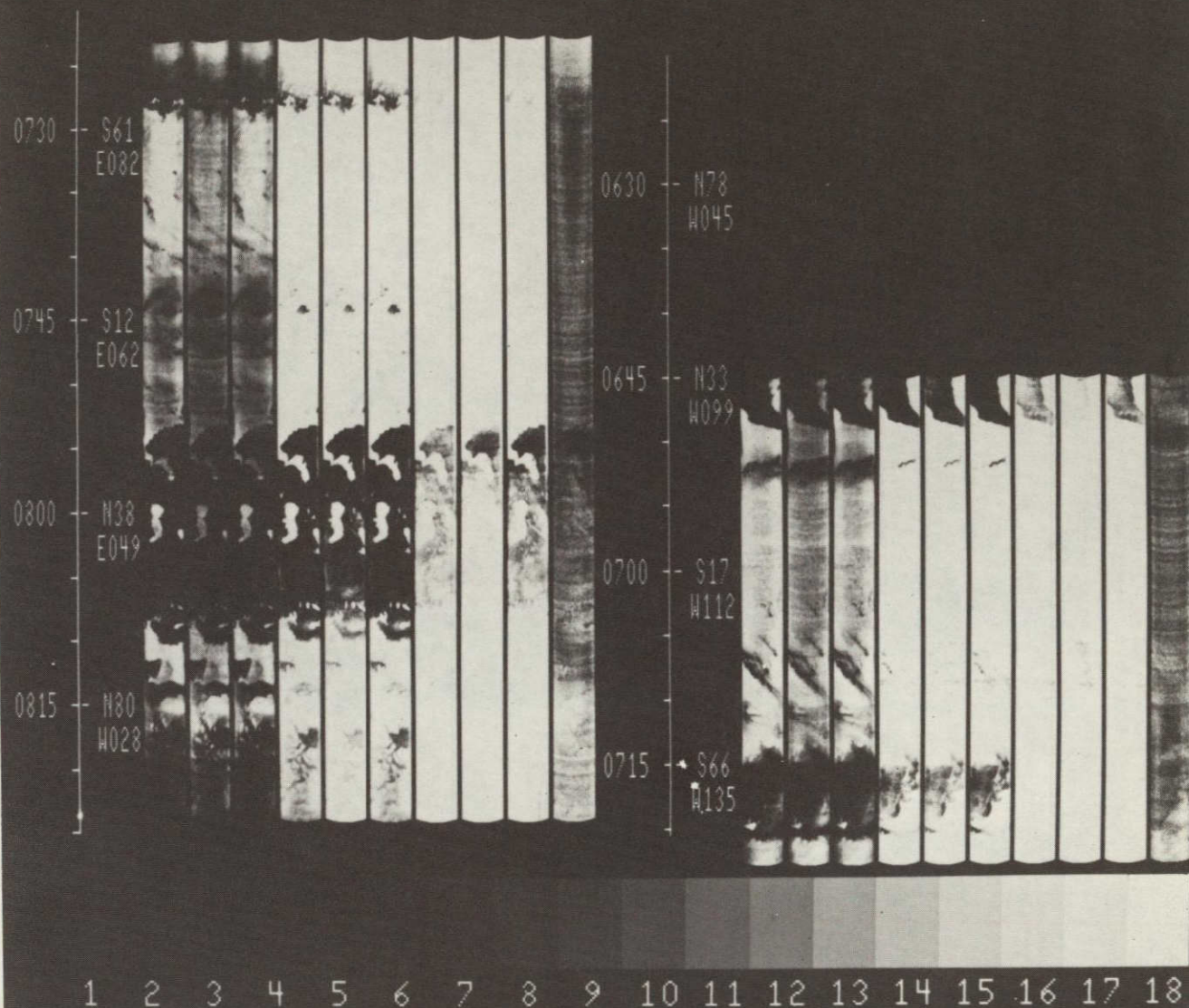


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NIMBUS 6-ESMR 12-03-75 SCALE-F INT ORBIT 002334
3200

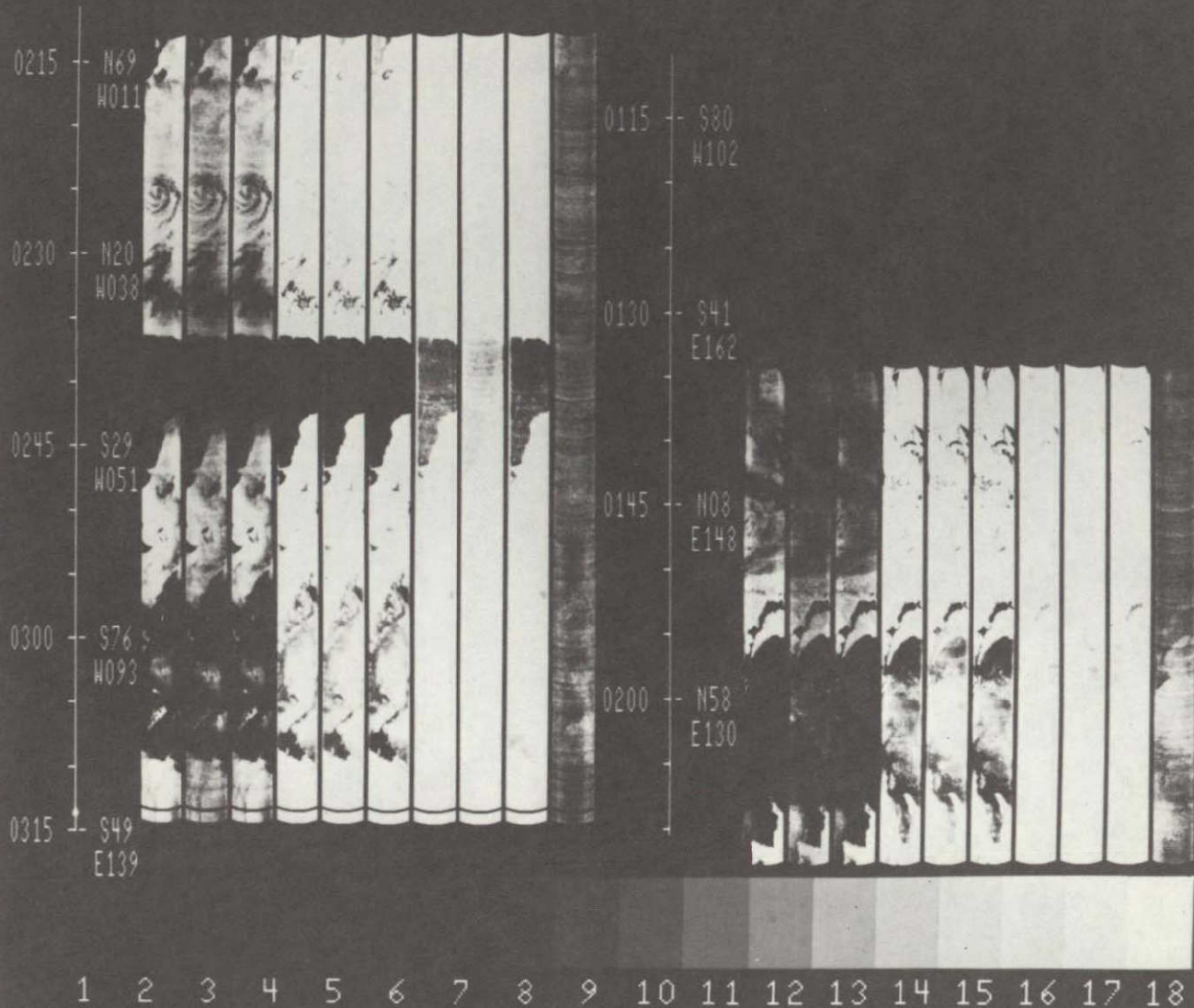


NIMBUS 6-ESMR 12-07-75 SCALE-F INT. ORBIT 002387
3200



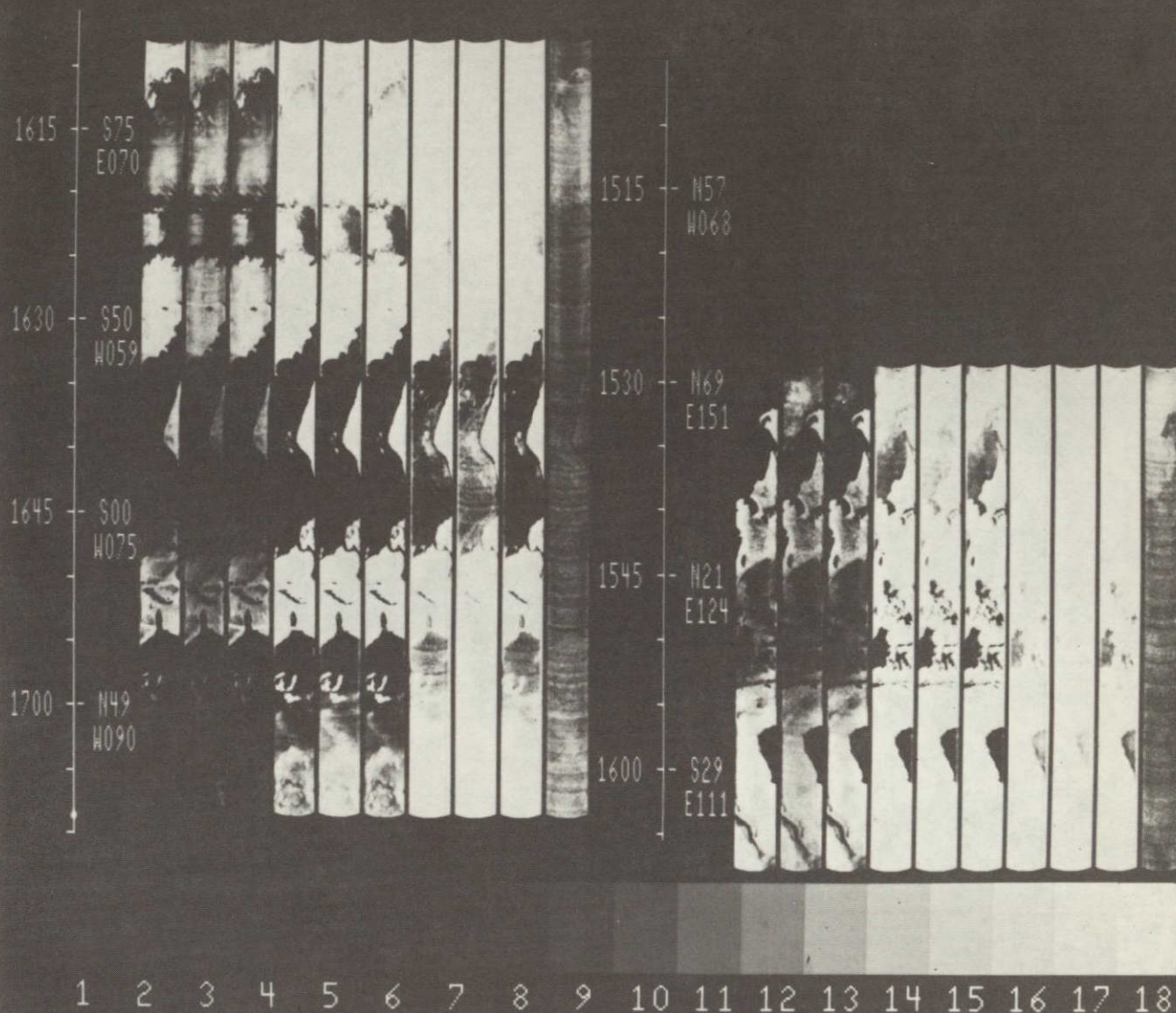
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NIMBUS 6-ESMR 12-18-75 SCALE-F INT. ORBIT 002531
3200



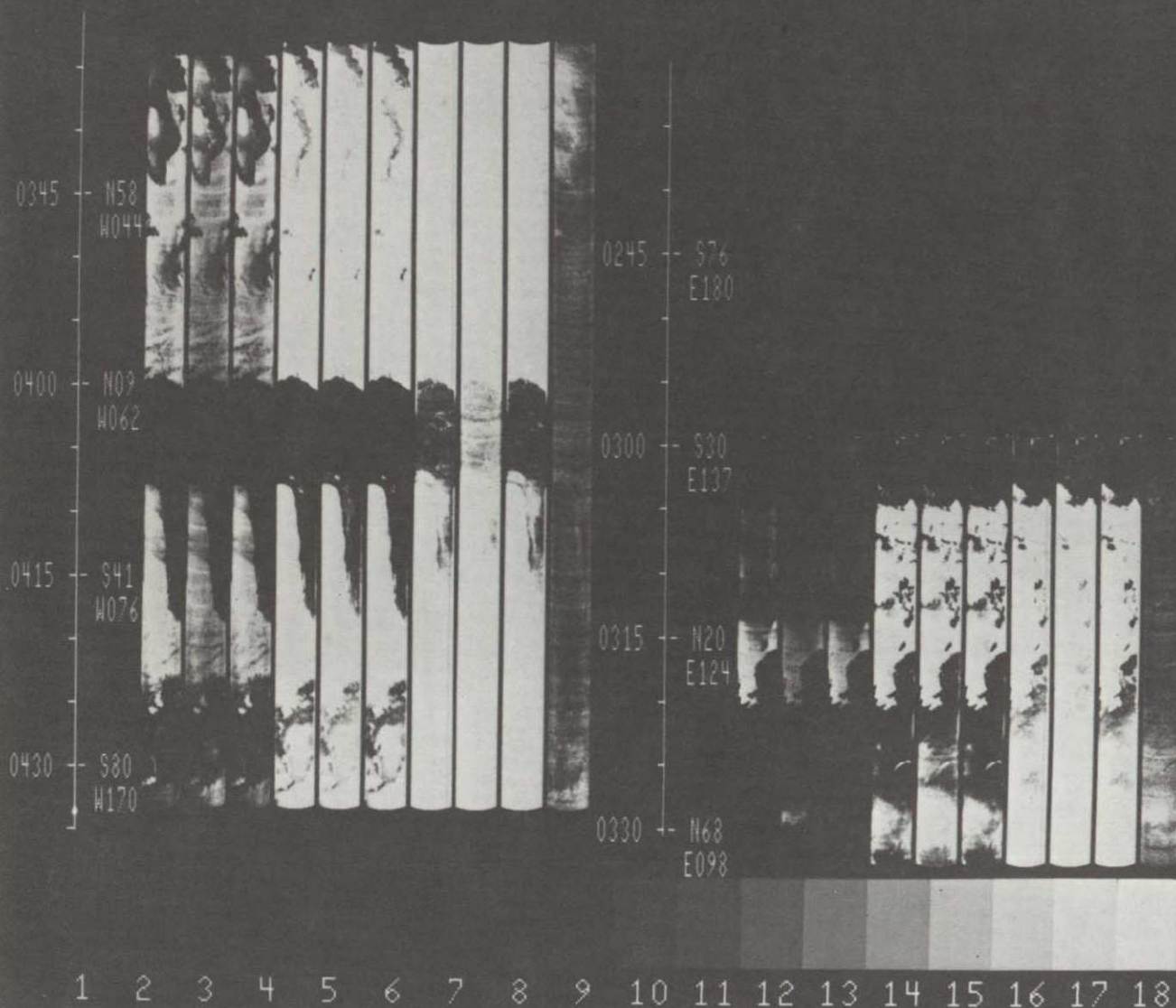
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NIMBUS 6-ESMR 12-22-75 SCALE-F INT ORBIT 002593
3200



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NIMBUS 6-ESMR 12-31-75 SCALE-F INT. ORBIT 002707
3200



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SECTION 4

TEMPERATURE HUMIDITY INFRARED RADIOMETER MONTAGES

The Nimbus 6 Temperature Humidity Infrared Radiometer (THIR) subsystem is of the same design and operation as the THIR flown on Nimbus 4 and 5. The two-channel scanning radiometer measures earth radiation in two spectral bands. A 10.3 μm to 12.5 μm (11.5 μm) window channel provides an image of the cloud cover, and temperatures of the cloud tops, land, and ocean surfaces. A 6.5 μm to 7.1 μm (6.7 μm) channel provides information on the moisture content of the upper troposphere and stratosphere, and the location of jet streams and frontal systems. Ground resolution at the satellite subpoint is 8.2 km for the 11.5 μm channel and 22.5 km for the 6.7 μm channel. Both channels operate continuously to provide day and night global coverage. However, with only HDRSS recorder (A) available for full-time use on the satellite, gaps in global coverage occur over "blind" orbit areas, and sometimes over the Rosmar and Alaska STDN stations, when the tape data is being transmitted to the ground. The blind orbits occur during a daytime pass over the western part of the Pacific Ocean and during a nighttime pass over the eastern part of the Atlantic Ocean. These blind orbit areas happen when the Orroral, Australia is not available for playback of recorded data. Then the time between successive playbacks of the tape recorder becomes longer than the record capability of the good HDRSS A plus the reduced capability of HDRSS B.

This section pictorially documents the data from the THIR. Section 4.1 contains all nighttime THIR 11.5 μm and 6.7 μm montages and Section 4.2 contains all daytime THIR 11.5 μm and 6.7 μm montages, arranged in chronological order. Key latitudes can be read from the superposed grids. Grid points are identified where each swath crosses 60°N, 30°N, EQUATOR, 30°S and 60°S.

Vellum Location Guide overlays, attached to the back of this document, are to be used for general orientation with the data presented in each THIR montage. Proper alignment of the overlay grid is accomplished by matching the grid indices on the equator with the two "T" marks on each montage.

THIR photographic data and/or digital data can be ordered through the National Space Science Data Center (NSSDC), Code 601, Goddard Space Flight Center, Greenbelt, Maryland 20771.

THIR photographic data consist of 70 mm film strips produced from the radiometer output signals. The gray shades in each image correspond to temperature variations of the land, sea, and clouds. On a film positive the lightest tones represent cold temperatures, while the darkest tones represent warm temperatures. THIR photographic data are archived in separate 6.7 μm and 11.5 μm daytime and nighttime swaths. The approximate coverage of a full swath is from pole to pole.

When ordering THIR photographic data from NSSDC the following information should be given:

- Satellite (e. g. Nimbus 6)
- Date of data
- Data orbit number, channel (11.5 μm or 6.7 μm), and whether day or night data
- Data format, i. e. , positive or negative transparencies, or prints
- Area of interest defined by latitude and longitude

In addition to the THIR film strips, photographic copies of the daily day or night montages prepared from film strips can be obtained.

Quantitative digital data are obtained when the original analog signals are digitized with full fidelity, and processed by an IBM 360 computer, where calibration and geographic referencing are applied. Each reduced radiation data tape prepared by the IBM 360 is call a Nimbus Meteorological Radiation Tape-THIR (NMRT-THIR). The NMRT can be used to generate grid print maps or to accomplish special scientific analyses. The format of this tape may be found in The Nimbus 6 User's Guide, Section 2.

Due to the large volume and the long computer running time required for processing THIR into NMRTs, Nimbus 6 THIR digital data are not routinely reduced to final NMRT format. Only those data which are specifically requested by the user will be processed. Requests should be made through NSSDC. It is anticipated that requested NMRT-THIR will begin to be available through NSSDC six months after launch. The user is urged to make full use of the film strips which are abundantly available in nearly real time from the NSSDC.

A series of programs at GSFC produce printed and contoured data referenced to a grid on Polar Stereographic or Mercator map bases. These are called grid print maps. The advantages of the grid print map presentation are the display of absolute values of temperatures in their approximate location and geographical rectification of the data. Grid print maps may be produced for either a single orbit or a composite of several orbits. The following standard options are available and should be specified when requesting grid print maps from NSSDC.

- Map and Approximate Scale
 - a. Polar Stereographic, 1:30 million
 - b. Polar Stereographic, 1:10 million

- c. Multi-resolution Mercator maps are available down to 1:1 million scale.
- Maximum Scan Angle (50 degrees is practical limit)
- Field Values and Contouring. Unless otherwise specified, all maps will include field values and contouring except Mercator maps of scales larger than 1:20 million. A data population map, indicating the number of individual measurements contained in each grid point average, as well as a latitude-longitude description for geographically locating the data, will be provided along with each grid print map.

When ordering grid print map data, the following identifying information should be given:

- Satellite (e. g. , Nimbus 6)
- Sensor (THIR)
- Channel (6.7 μm or 11.7 μm)
- Data Orbit Number
- Calendar Date of Equator Crossing
- Beginning and ending Times of Data in GMT
- Latitude and Longitude Limits of Area of Interest
- Map Type and map scale
- Scan angle limits
- Contouring or no contouring of data points

When ordering NMRTs, the "Calendar Date of Equator Crossing" and "Map type and map scale" can be omitted.

Beginning and ending times of data in GMT can be interpolated using Table 4-1 which gives the elapsed time from either ascending or descending node as a function of latitude. These elapsed time values can be appropriately added or subtracted from node times given in Table 2-2.

A complete description of the THIR experiment may be found in The Nimbus 6 User's Guide, Section 2.

Table 4-1

Latitude Versus Minutes From
Ascending or Descending Node

Latitude from AN or DN	Minutes and Seconds from AN or DN
0	0:00
5	1:31
10	3:02
15	4:33
20	6:03
25	7:34
30	9:05
35	10:36
40	12:08
45	13:40
50	15:12
55	16:44
60	18:18
65	19:52
70	21:33
75	23:26
78	24:44
80.1	26:49
78	29:00
75	30:09
70	31:51
65	33:35

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SECTION 4.1

TEMPERATURE HUMIDITY INFRARED RADIOMETER

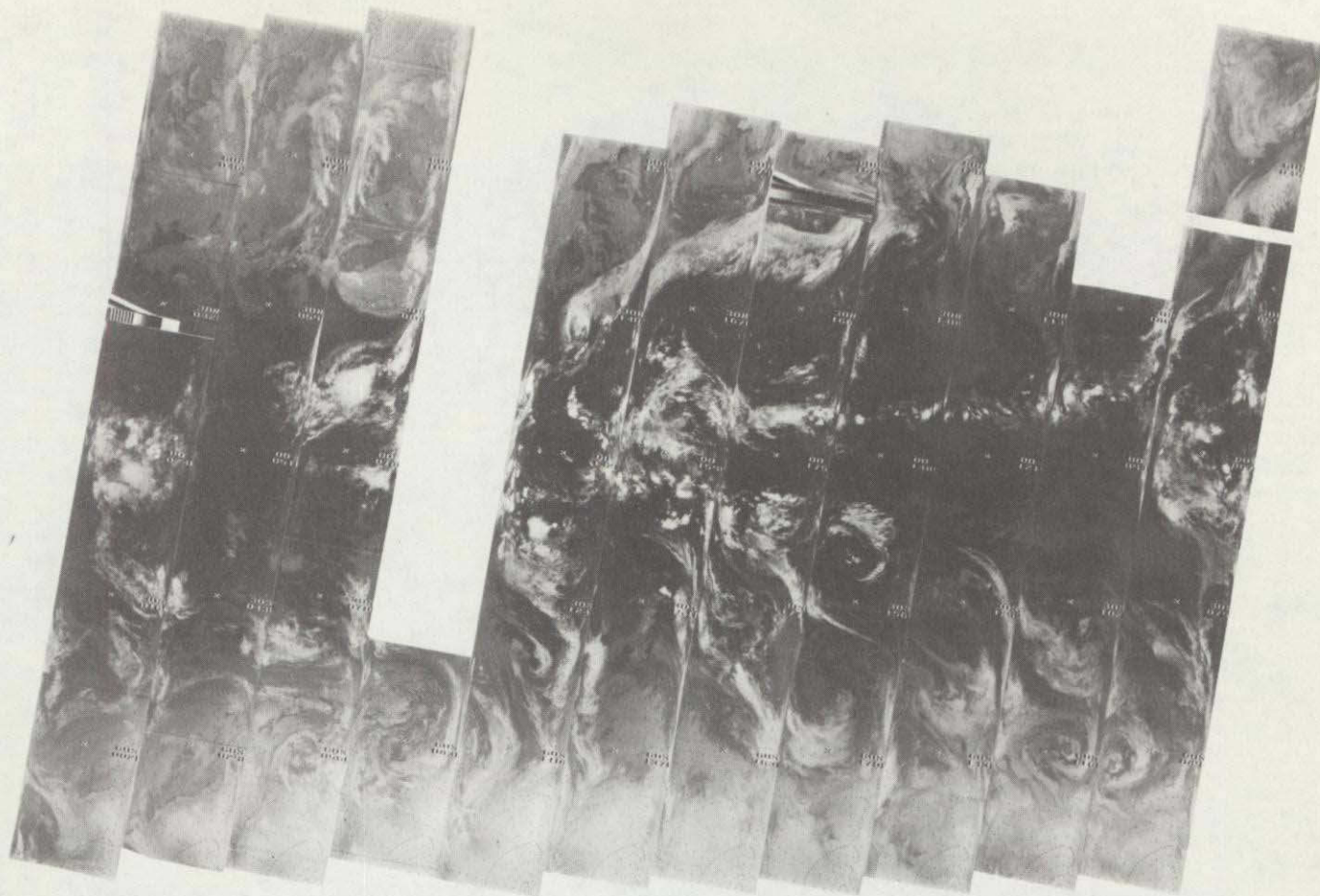
NIGHTTIME MONTAGES

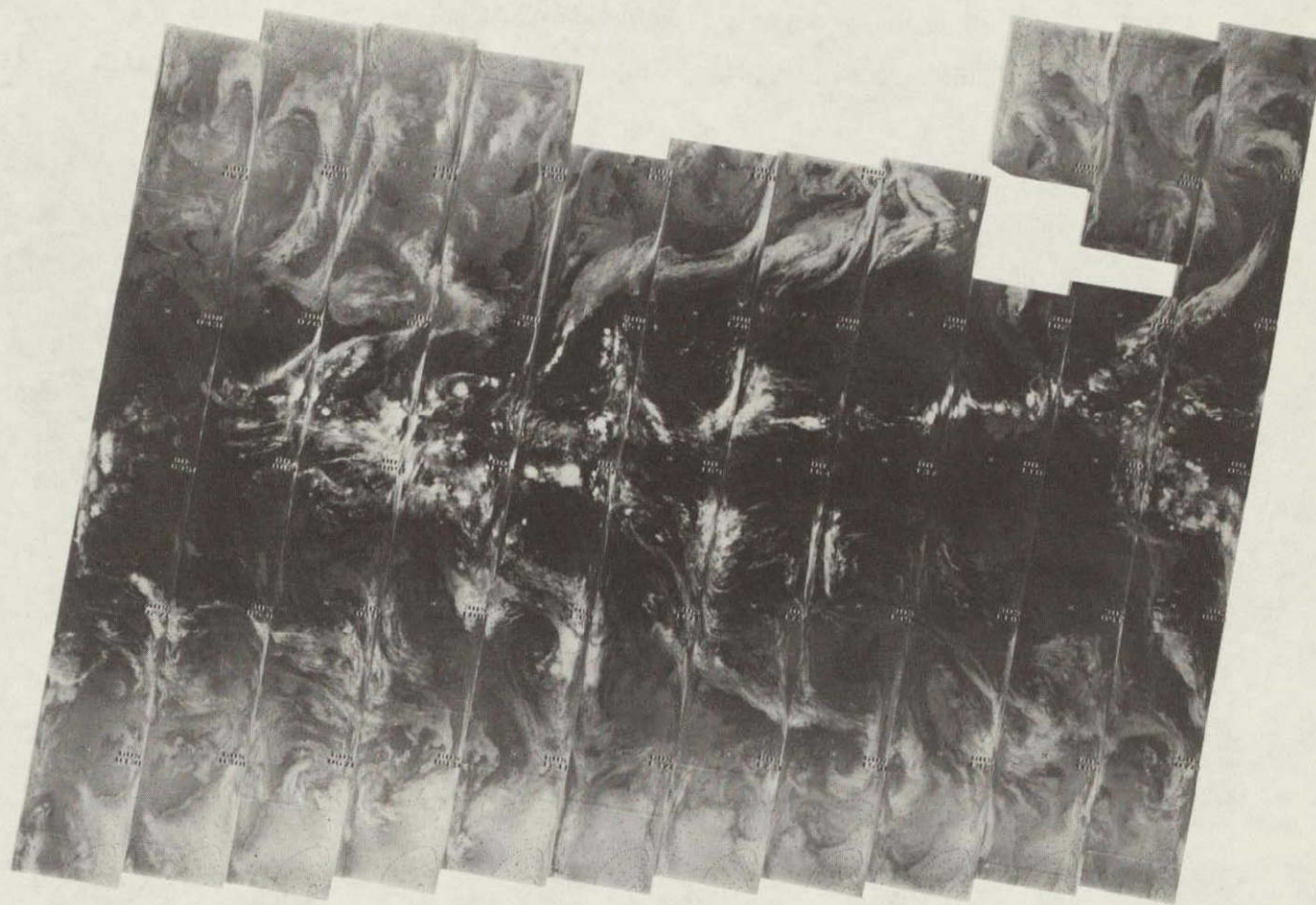
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1913 1912 1911 1910 1909 1908 1907 1906 1905 1904 1903 1902 1901

1 NOVEMBER 1975

11.5 μm



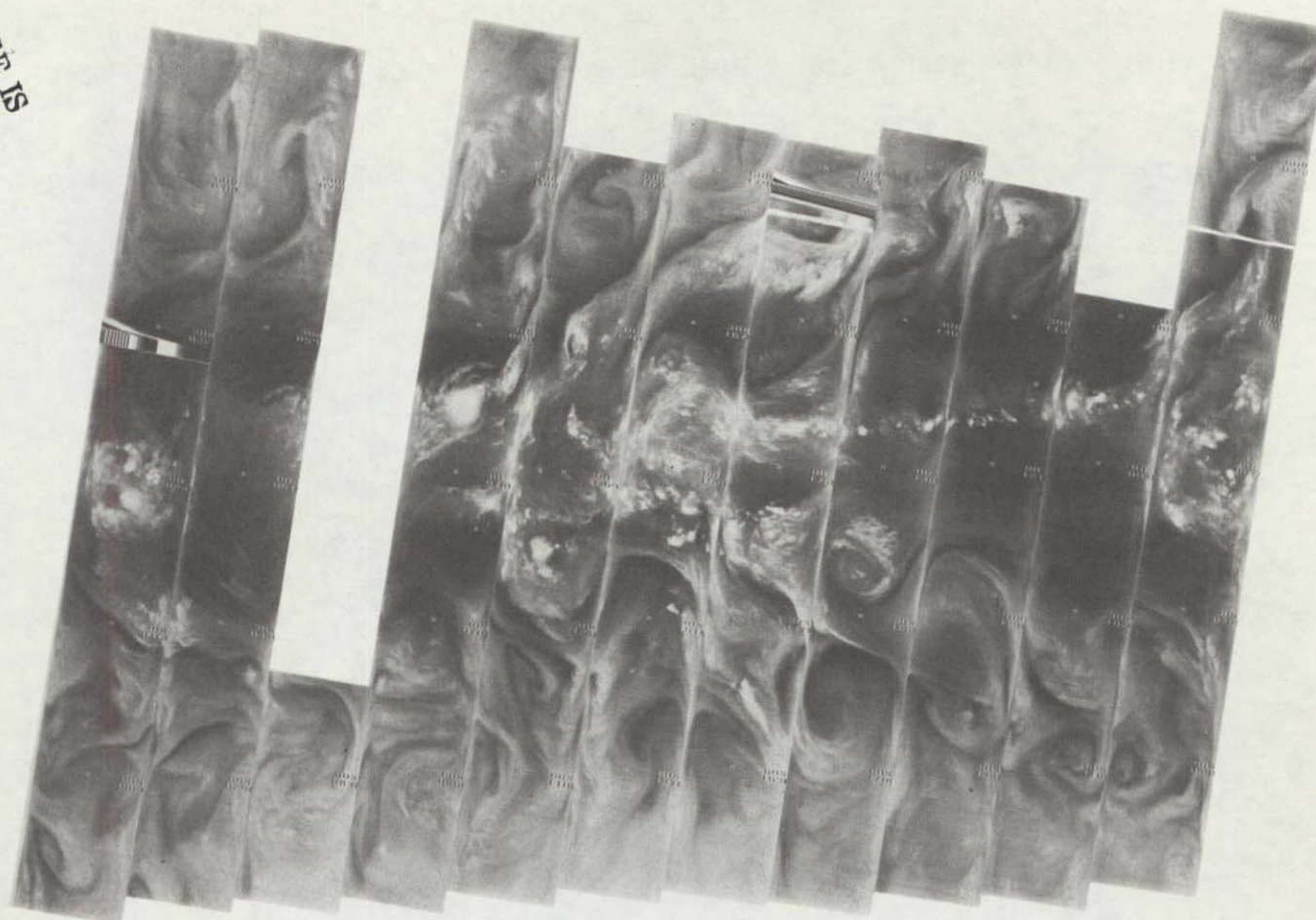


1926 1925 1924 1923 1922 1921 1920 1919 1918 1917 1916 1915 1914

2 NOVEMBER 1975

11.5 μm

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1913 1912 1911 1910 1909 1908 1907 1906 1905 1904 1903 1902 1901

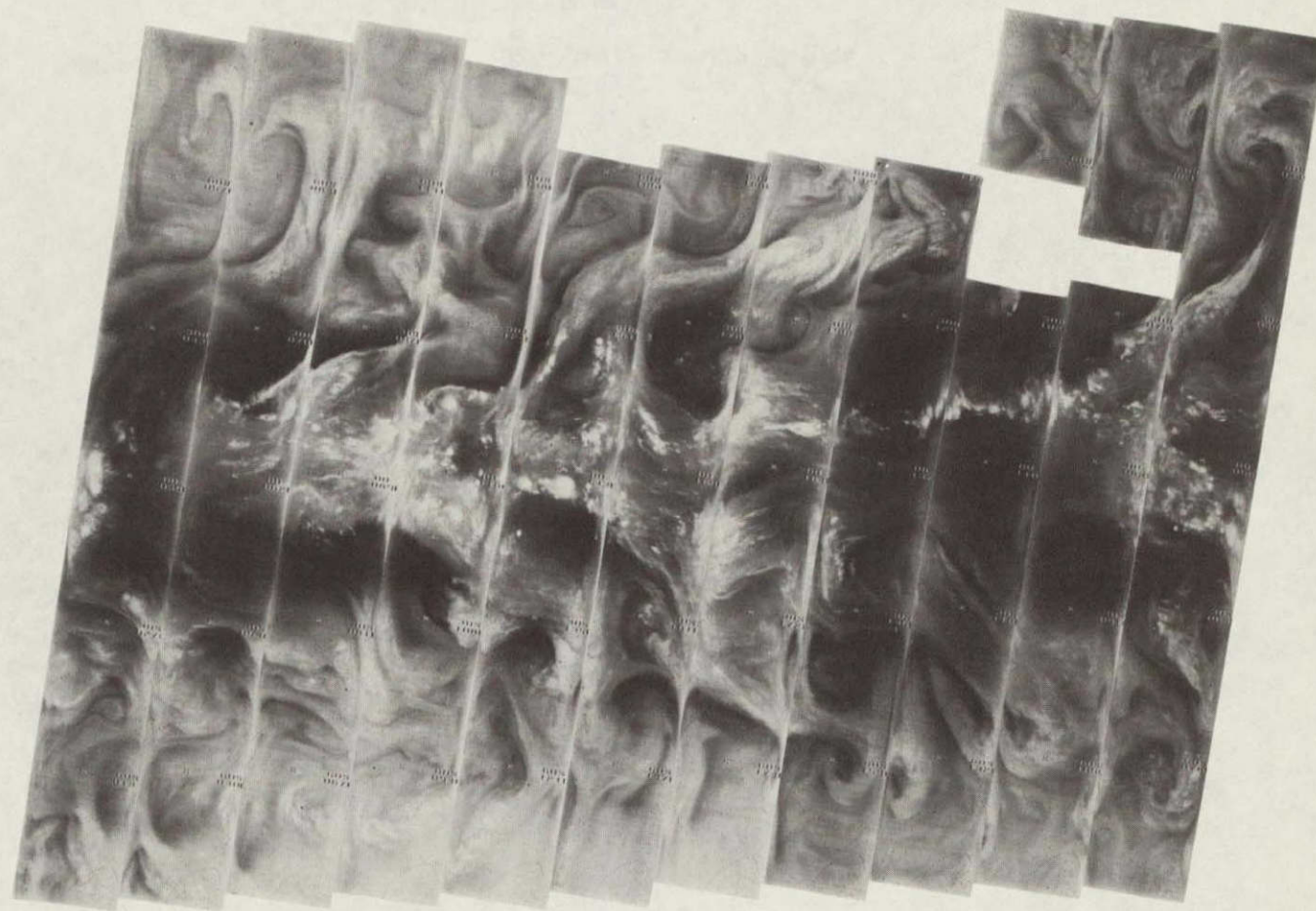
1 NOVEMBER 1975

6.7 μm

4-9

T

T

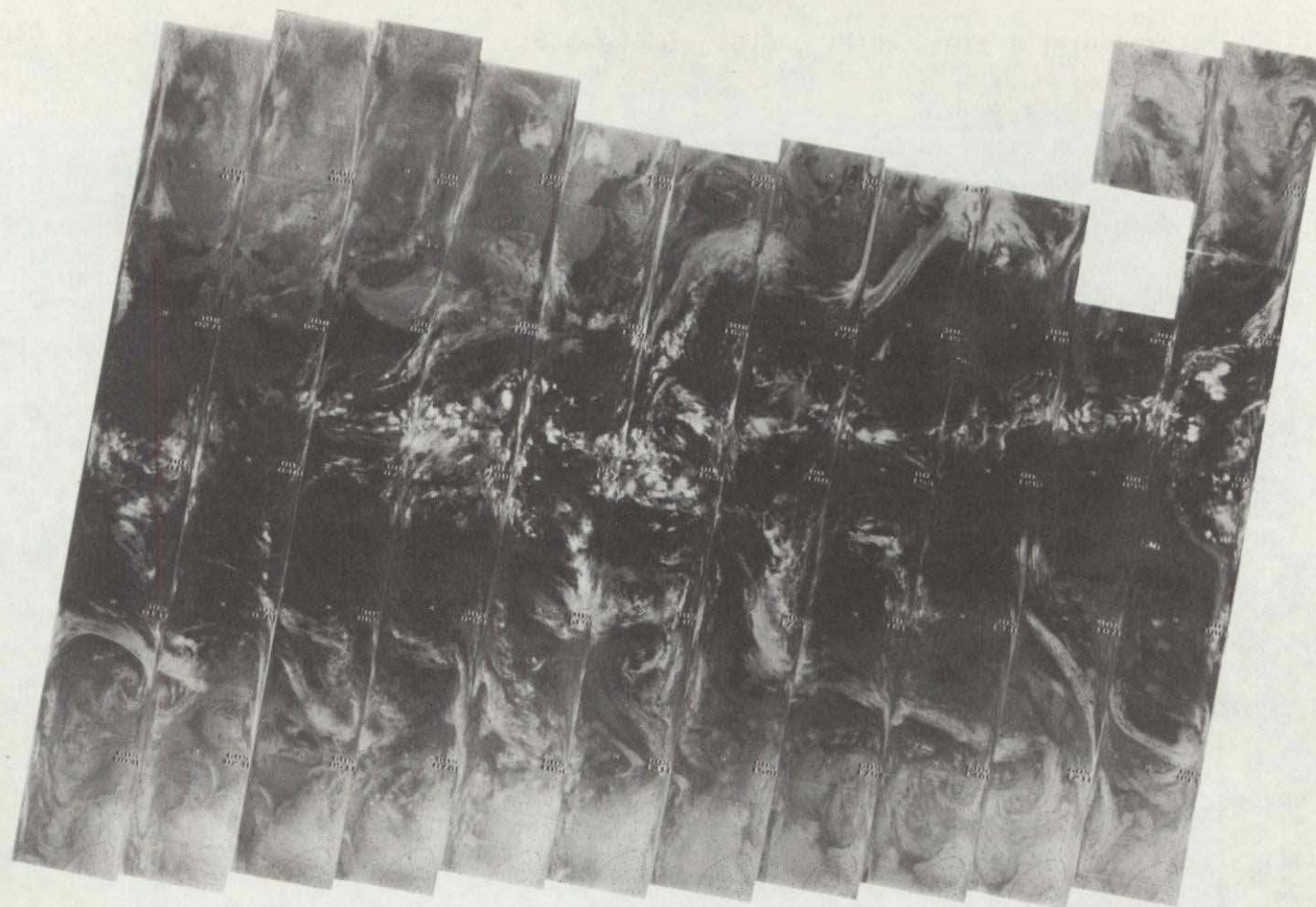


1926 1925 1924 1923 1922 1921 1920 1919 1918 1917 1916 1915 1914

2 NOVEMBER 1975

6.7 μm

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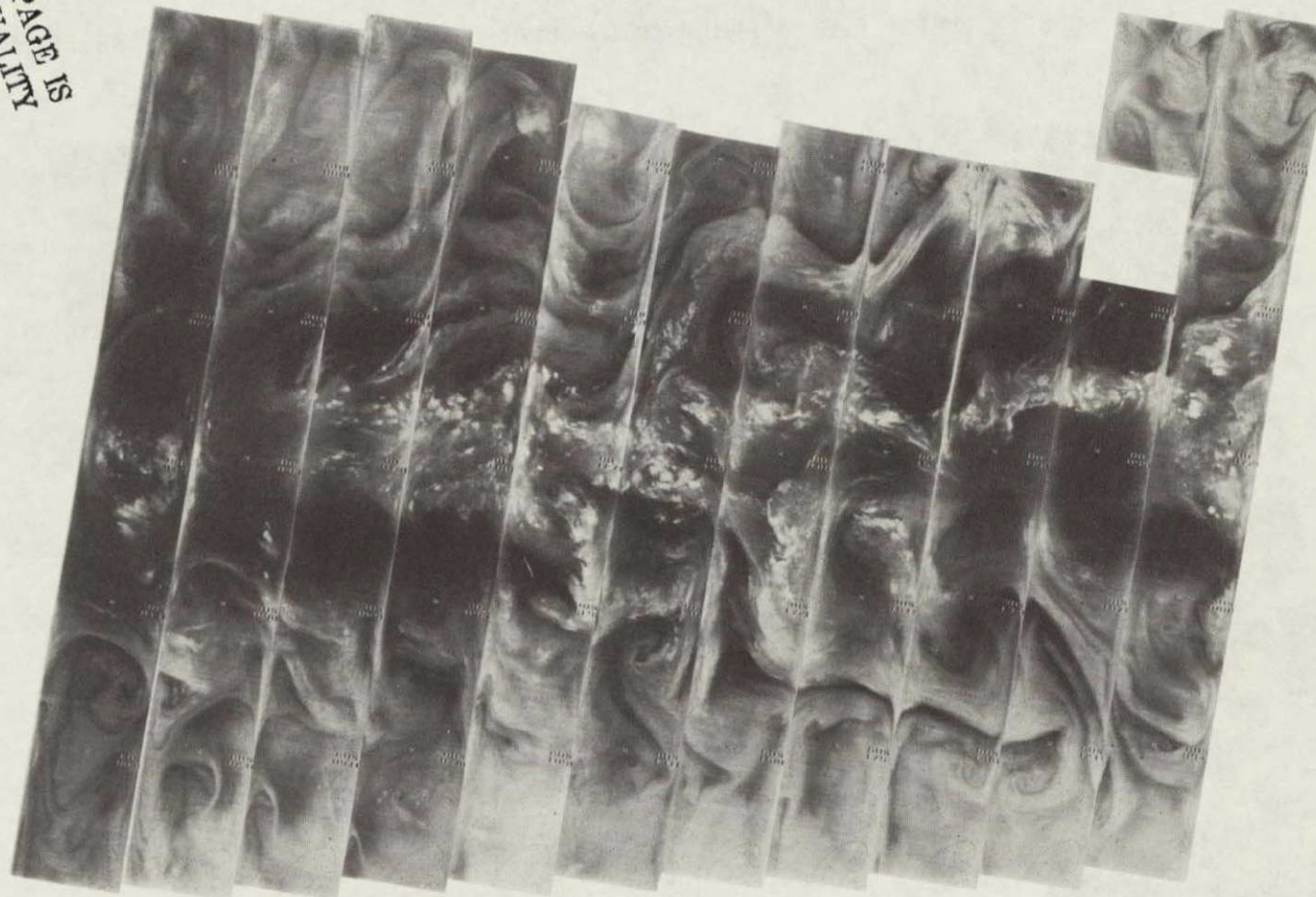


1940 1939 1938 1937 1936 1935 1934 1933 1932 1931 1930 1929 1928 1927

3 NOVEMBER 1975

11.5 μ m

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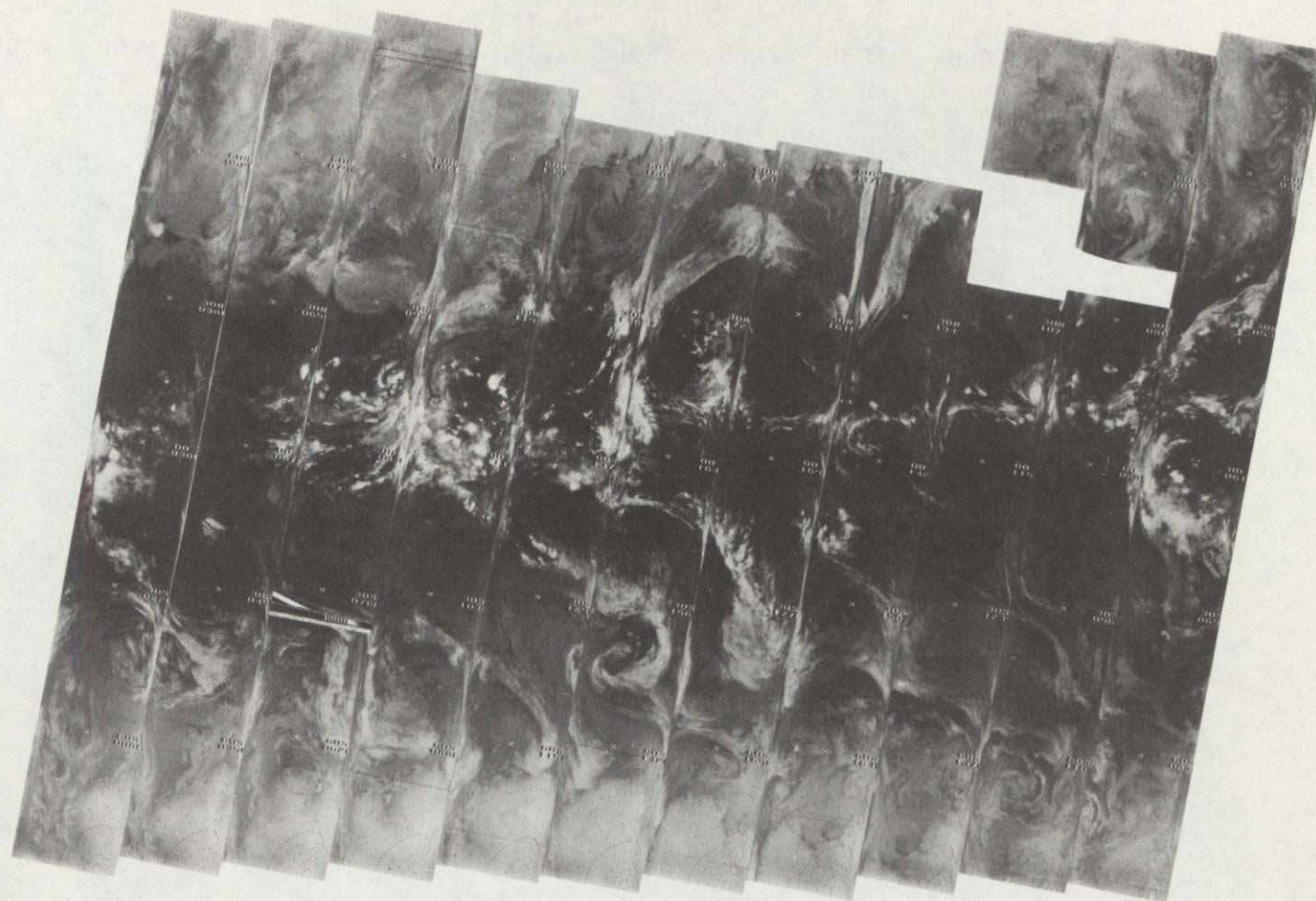


1940 1939 1938 1937 1936 1935 1934 1933 1932 1931 1930 1929 1928 1927

3 NOVEMBER 1975

6.7 μm

4-12



1953 1952 1951 1950 1949 1948 1947 1946 1945 1944 1943 1942 1941

4 NOVEMBER 1975

11.5 μm

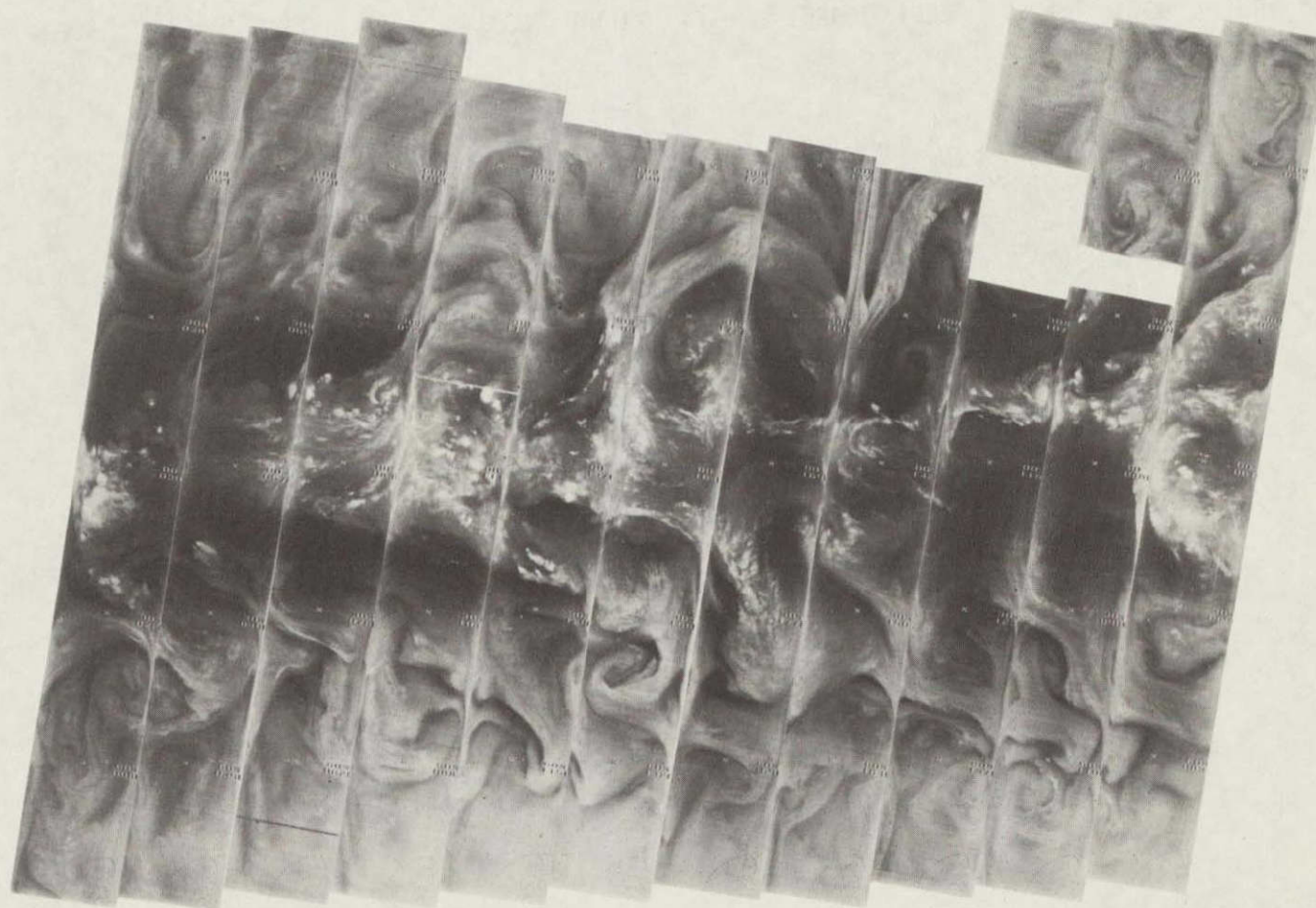
4-13

T

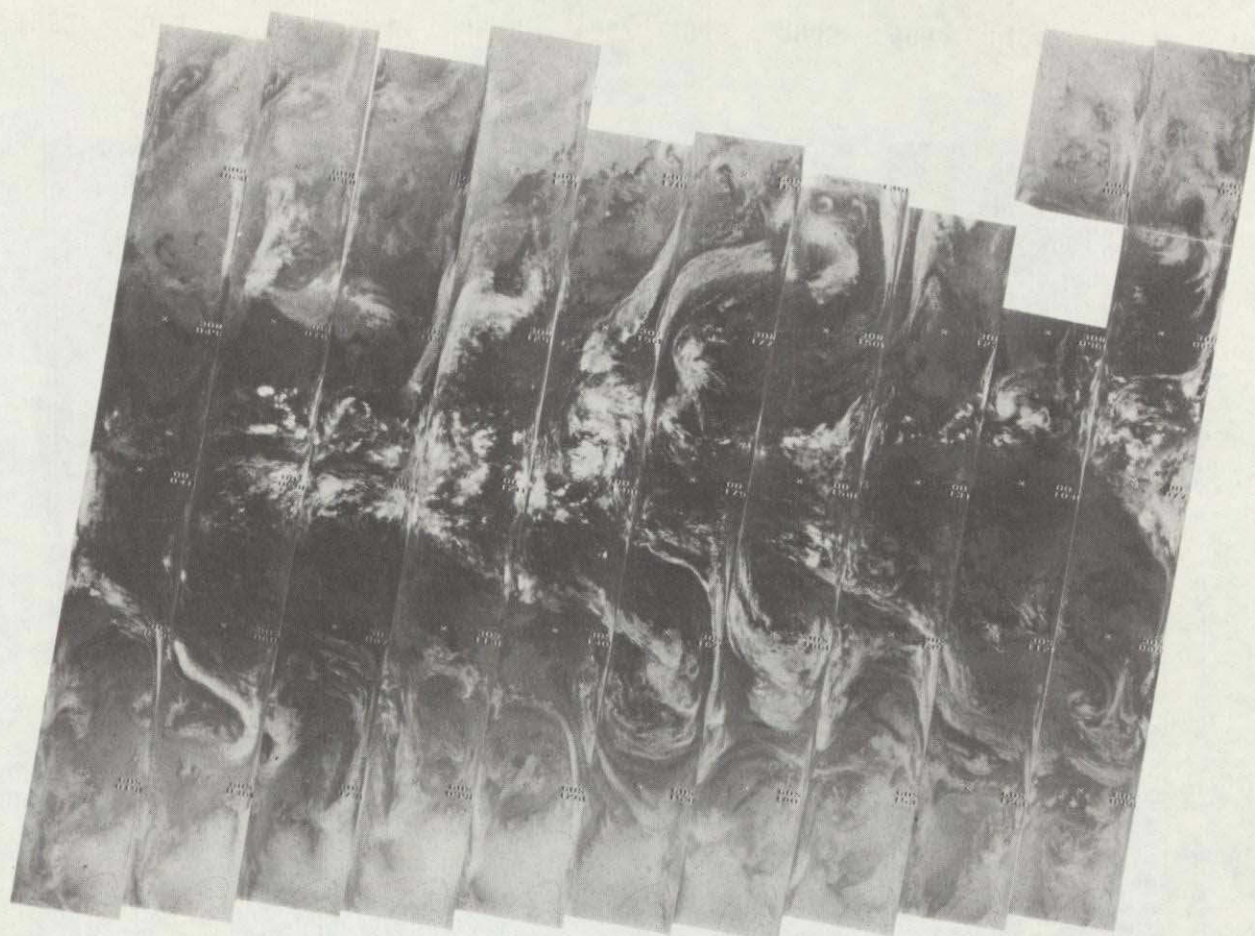
1953 1952 1951 1950 1949 1948 1947 1946 1945 1944 1943 1942 1941

4 NOVEMBER 1975

6.7 μm



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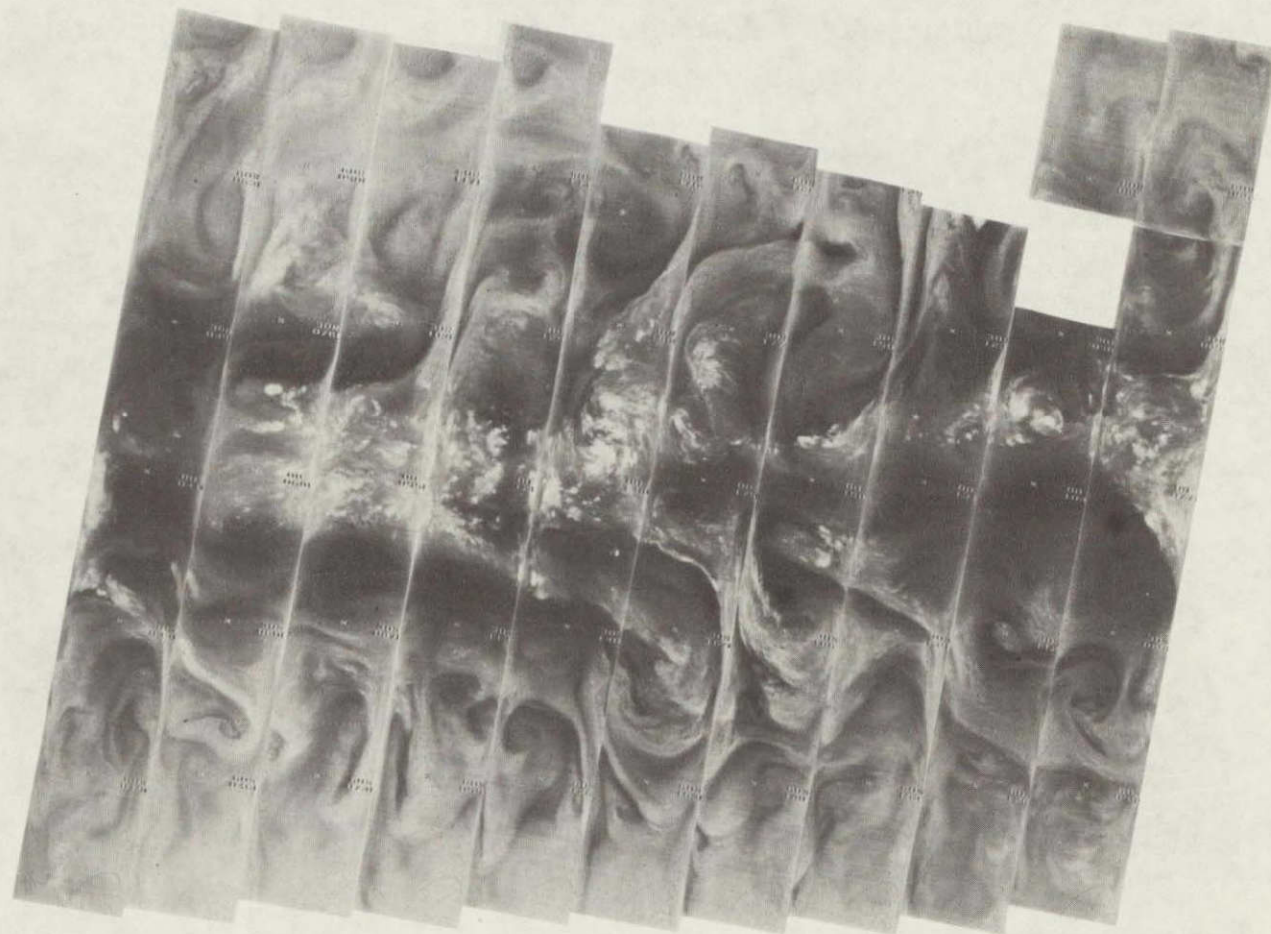


1967 1966 1965 1964 1963 1962 1961 1960 1959 1958 1957 1956 1955 1954

5 NOVEMBER 1975

11.5 μm

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5 NOVEMBER 1975

6.7 μm



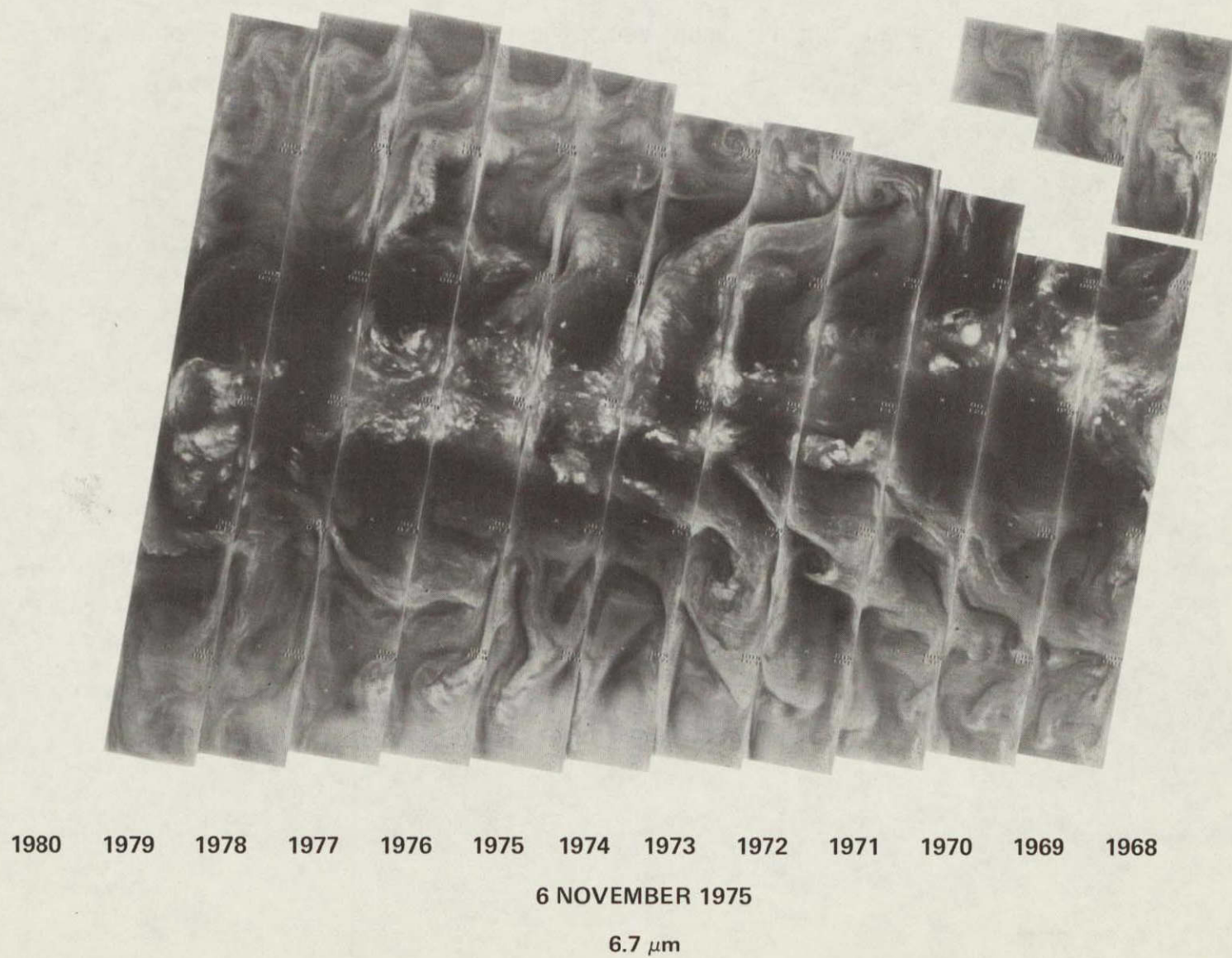
1980 1979 1978 1977 1976 1975 1974 1973 1972 1971 1970 1969 1968

6 NOVEMBER 1975

11.5 μm

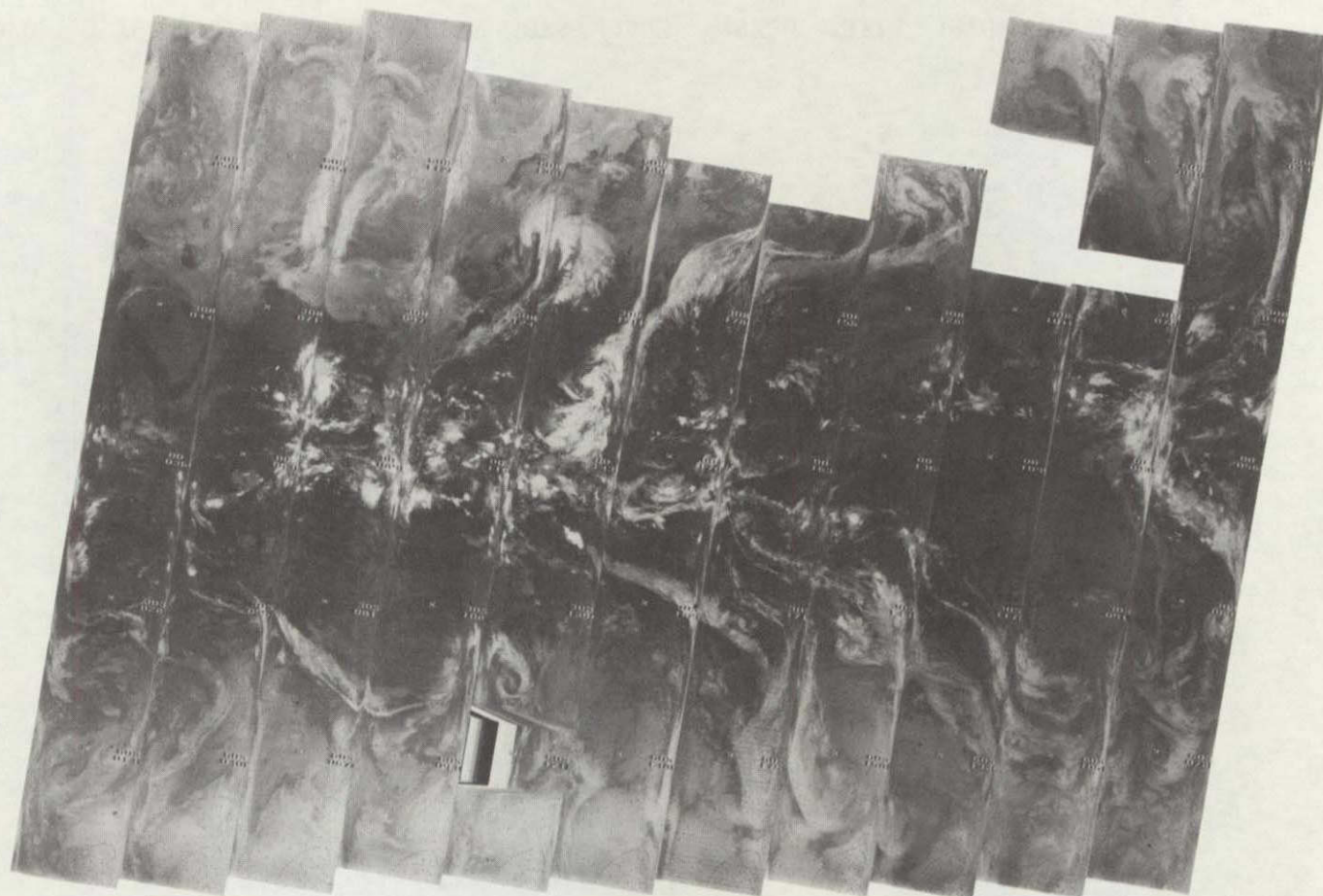
4-16

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L

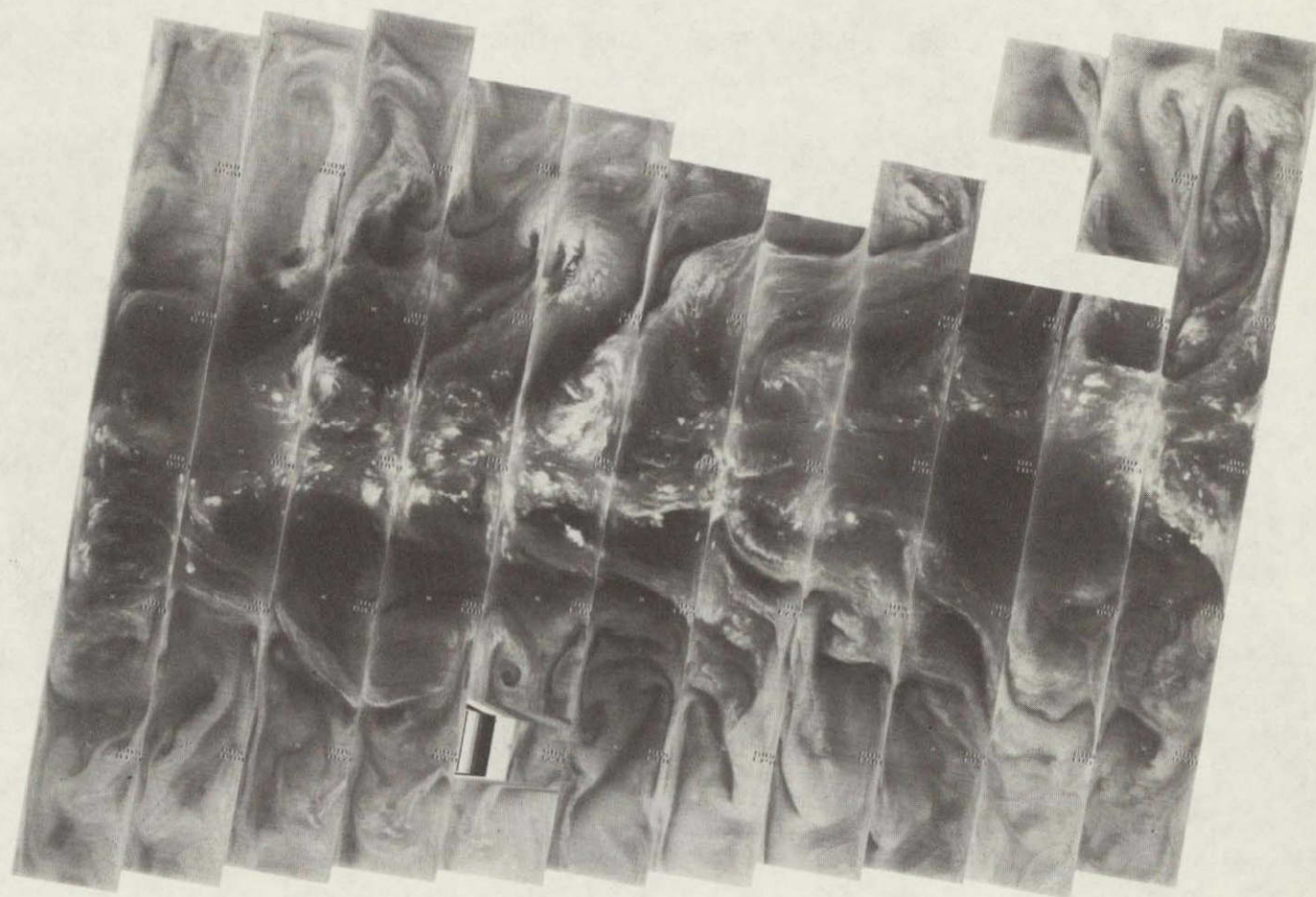
1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981

7 NOVEMBER 1975

11.5 μm

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T



1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981

7 NOVEMBER 1975

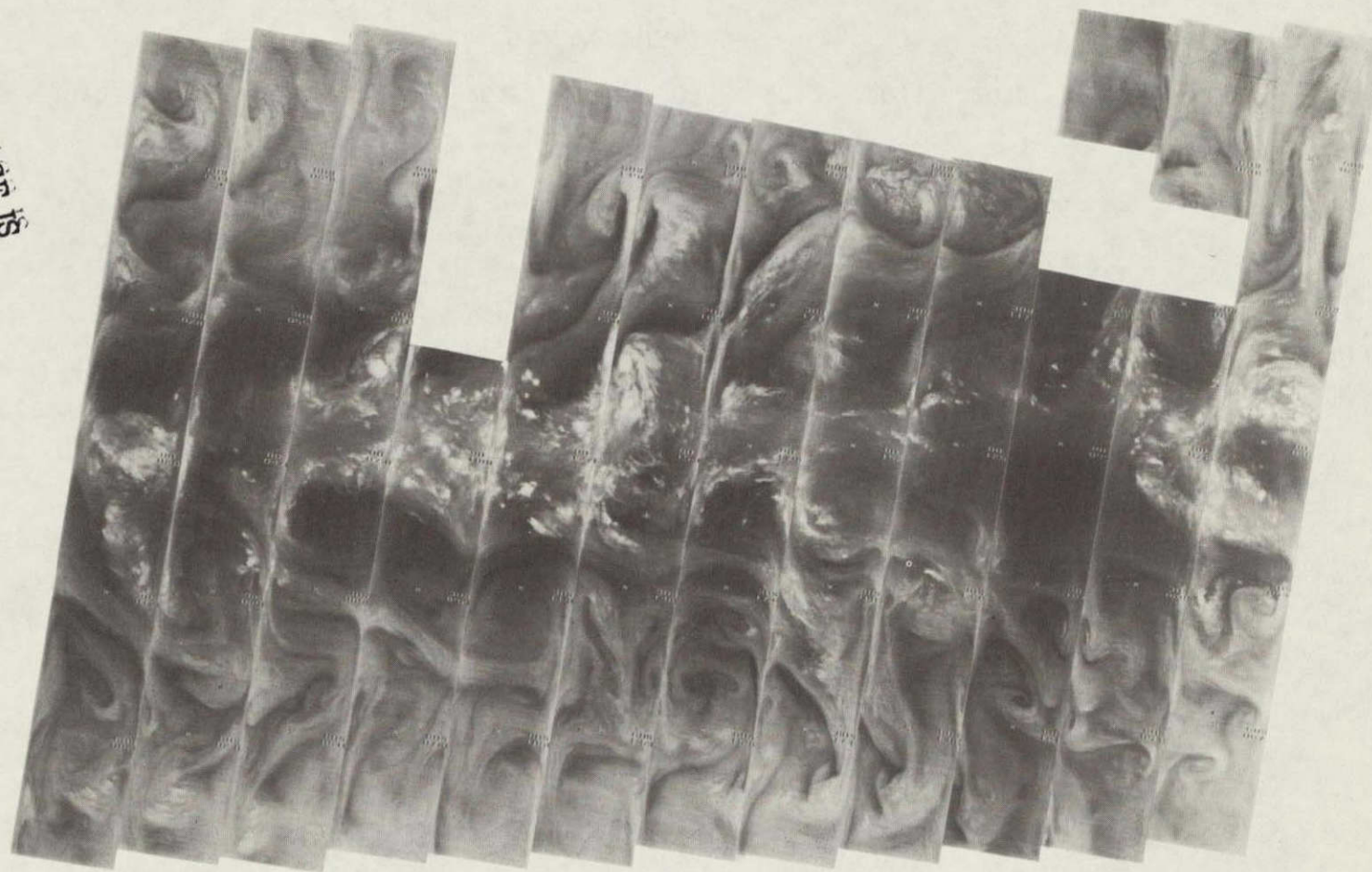
6.7 μm

L

T

+

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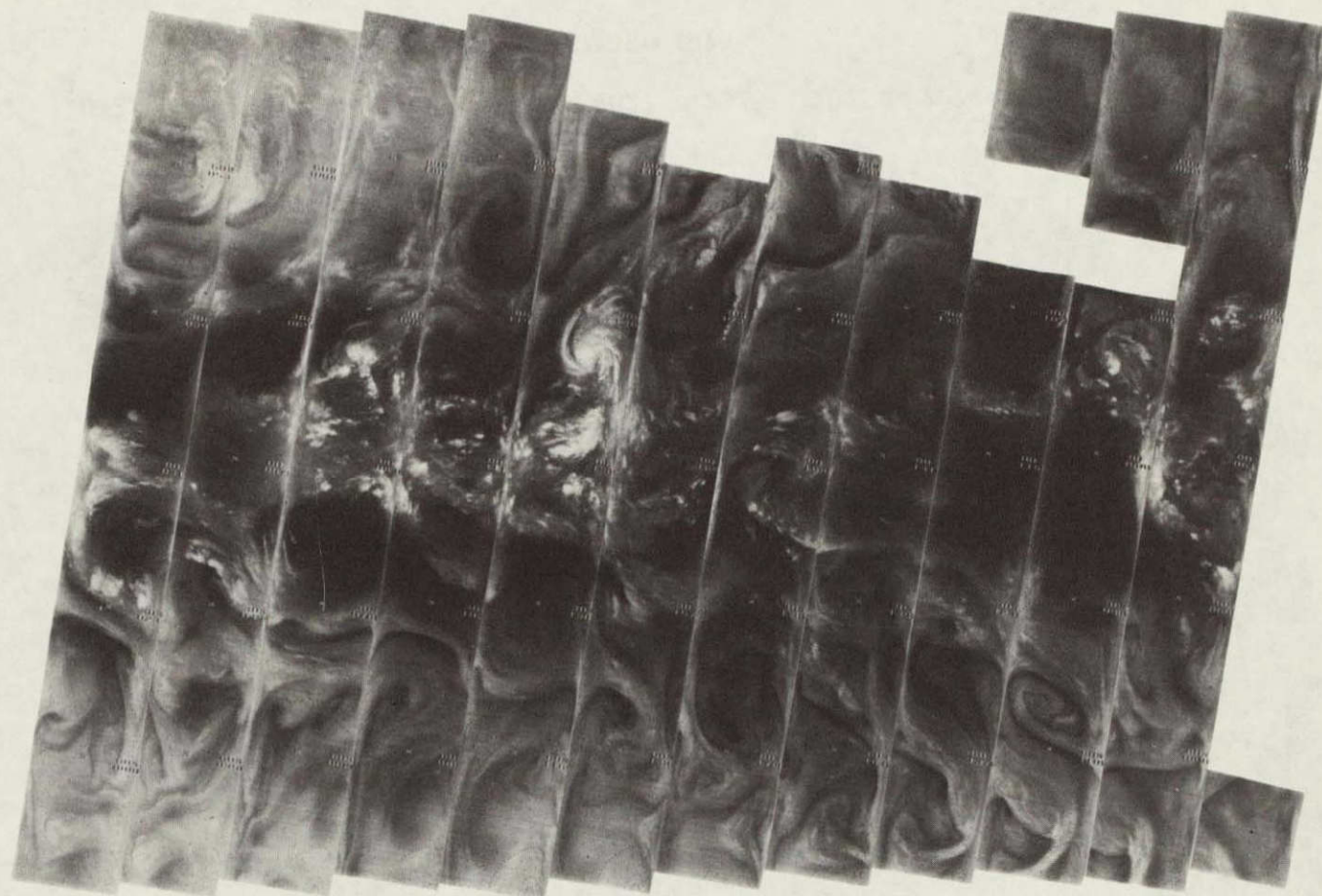
2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994

8 NOVEMBER 1975

6.7 μm

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4-23

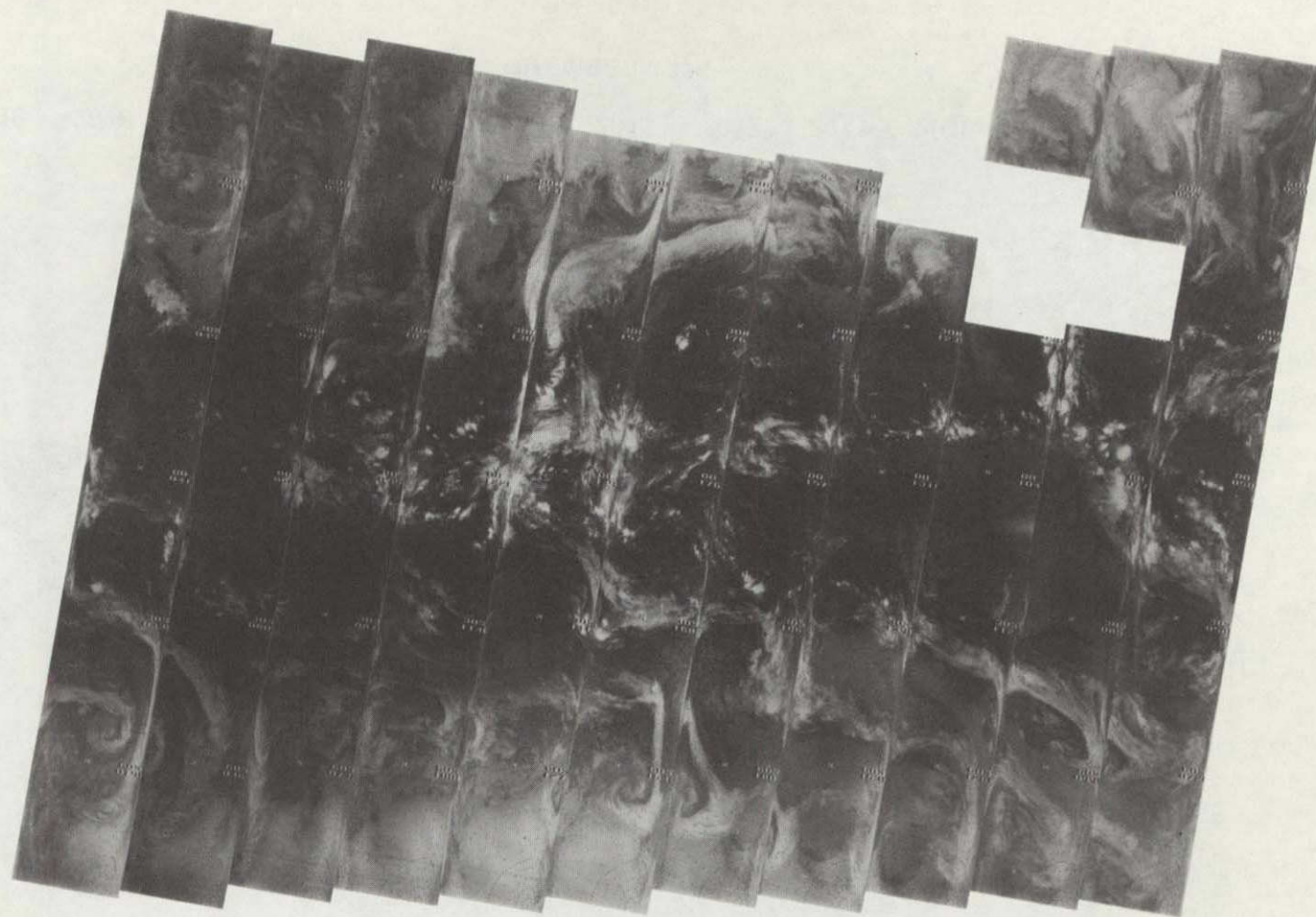


2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009 2008

9 NOVEMBER 1975

6.7 μm

4-24

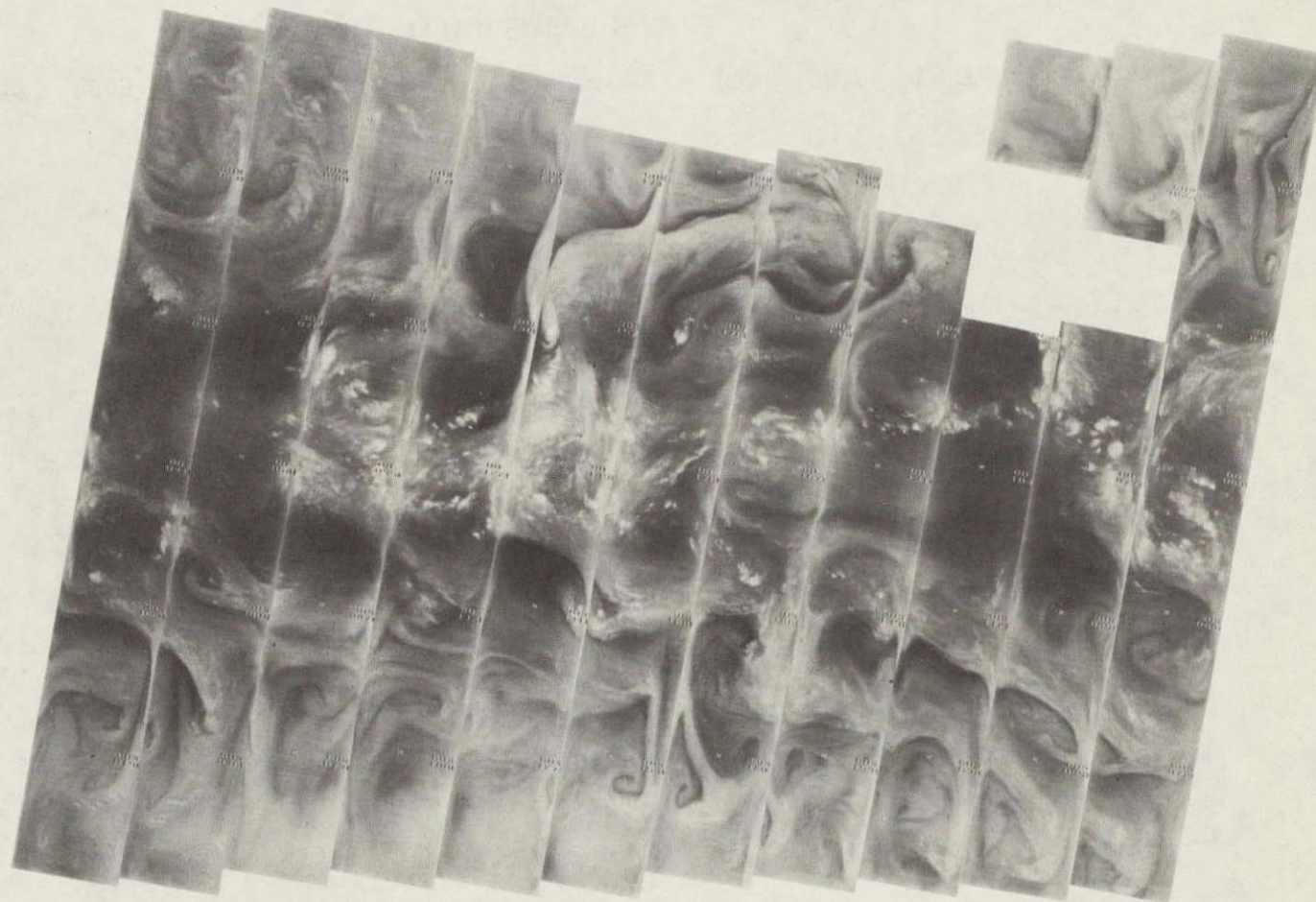


2034 2033 2032 2031 2030 2029 2028 2027 2026 2025 2024 2023 2022 2021

10 NOVEMBER 1975

11.5 μm

4-25

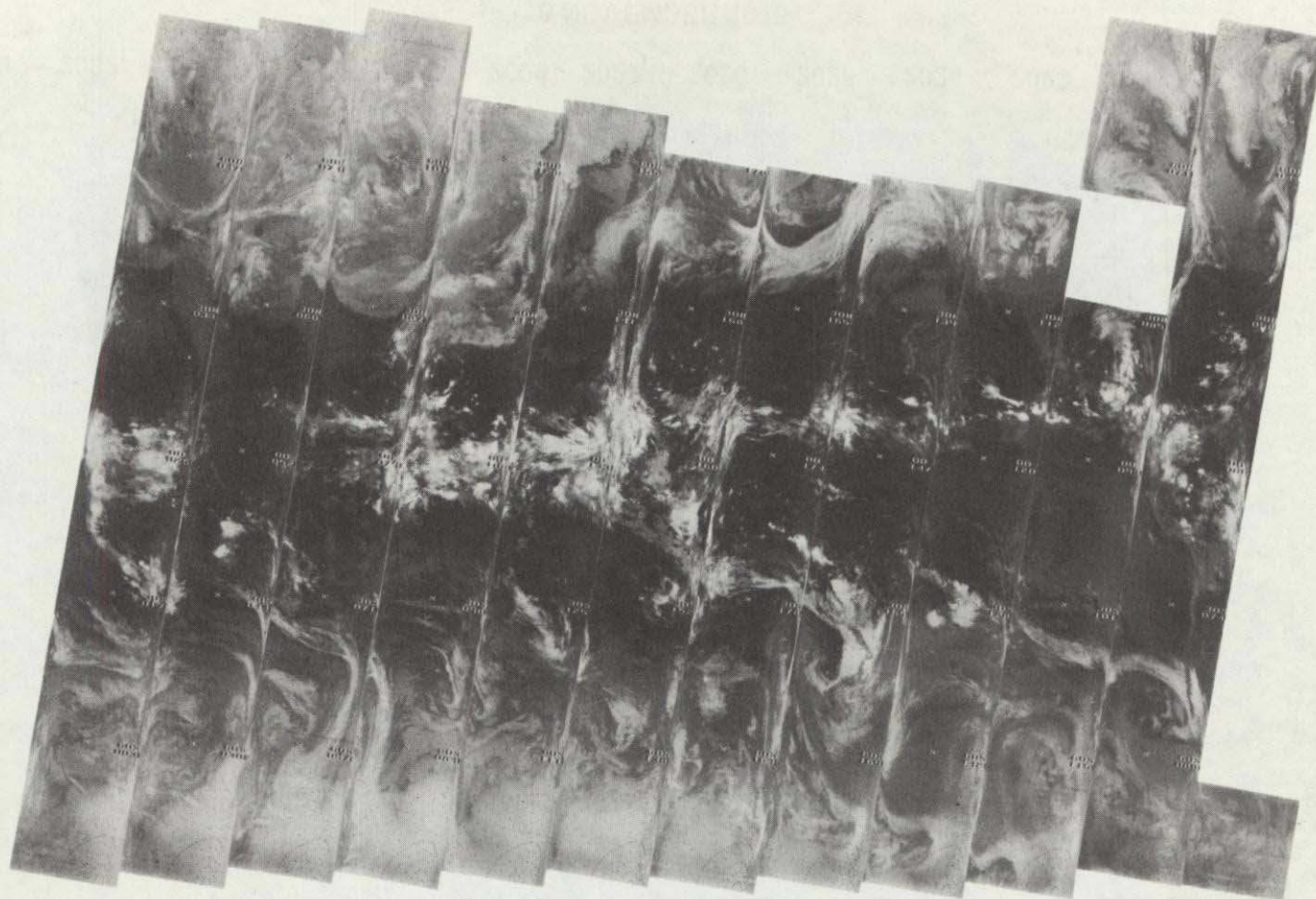


2034 2033 2032 2031 2030 2029 2028 2027 2026 2025 2024 2023 2022 2021

10 NOVEMBER 1975

6.7 μm

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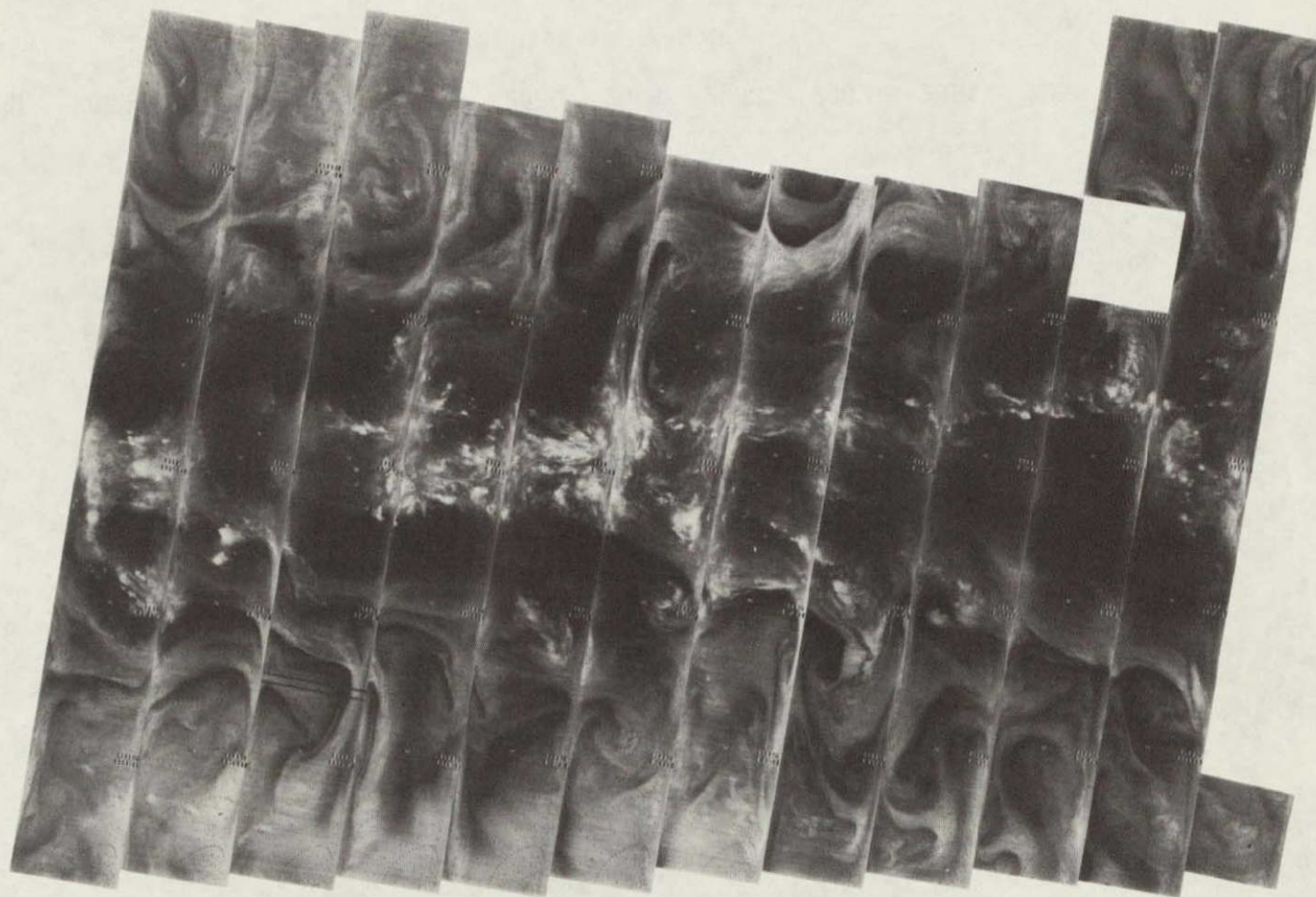


2047 2046 2045 2044 2043 2042 2041 2040 2039 2038 2037 2036 2035

11 NOVEMBER 1975

11.5 μm

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OF POOR QUALITY

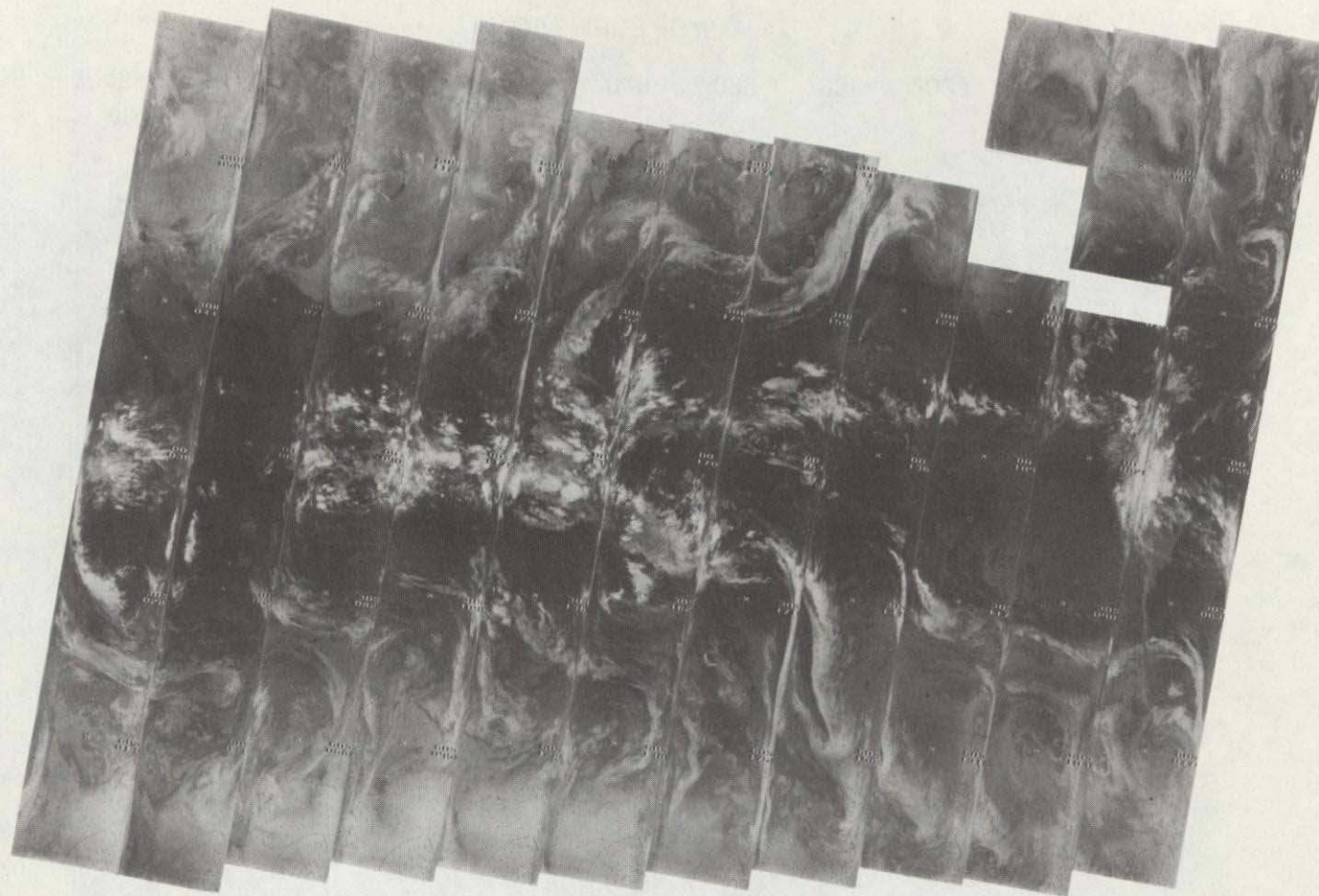


2047 2046 2045 2044 2043 2042 2041 2040 2039 2038 2037 2036 2035

11 NOVEMBER 1975

6.7 μm

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OF POOR QUALITY

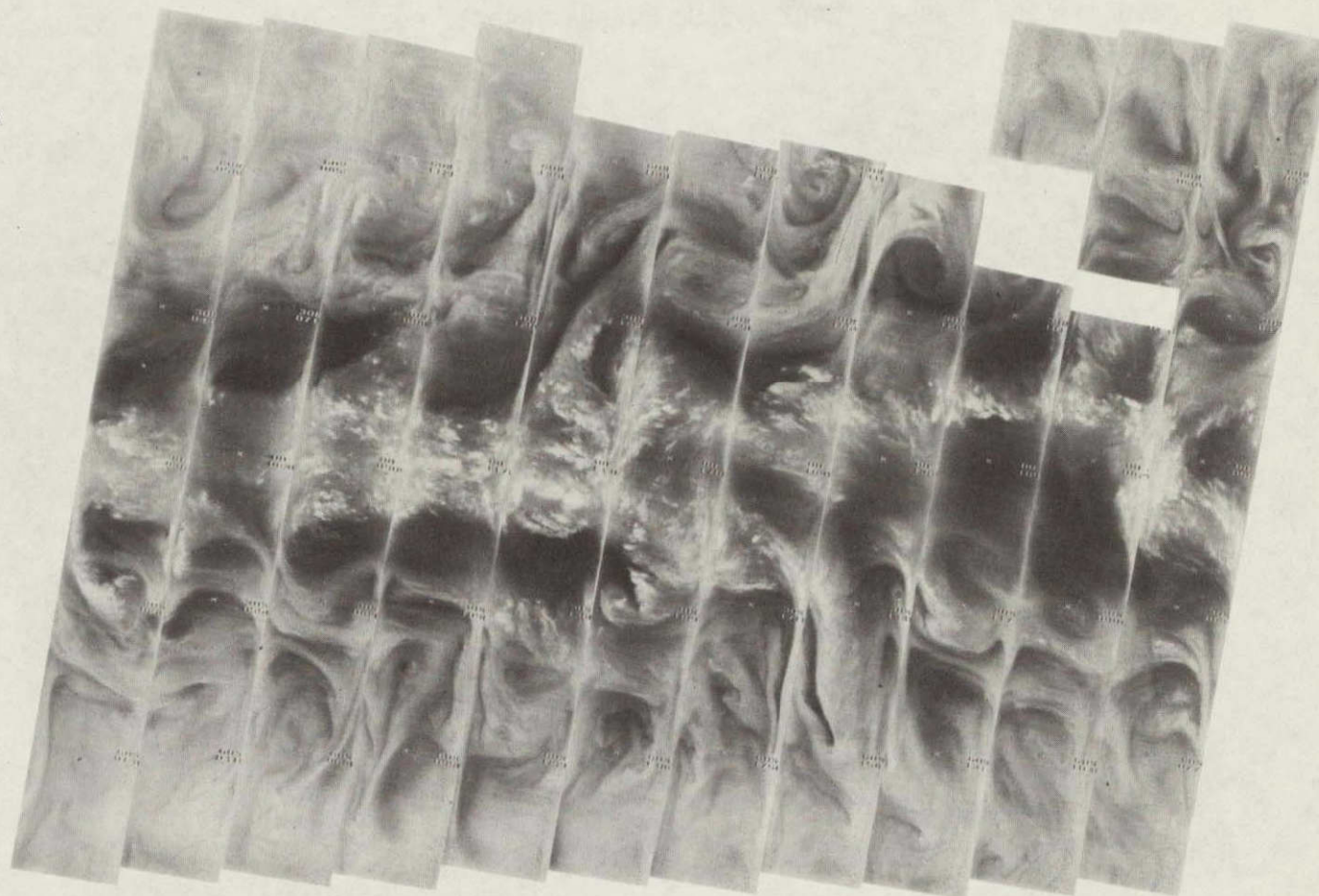


2060 2059 2058 2057 2056 2055 2054 2053 2052 2051 2050 2049 2048

12 NOVEMBER 1975

11.5 μm

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2060 2059 2058 2057 2056 2055 2054 2053 2052 2051 2050 2049 2048

12 NOVEMBER 1975

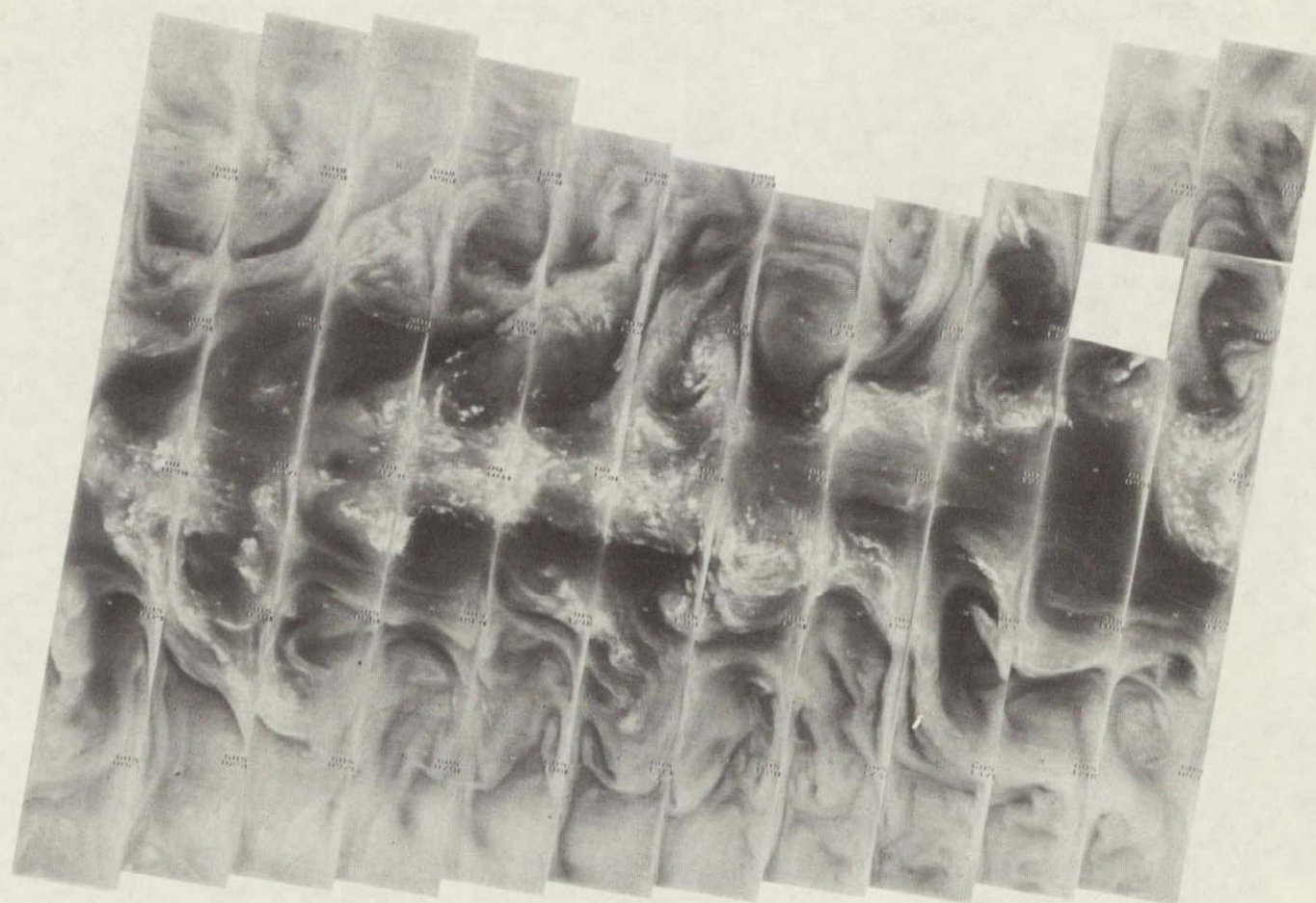
6.7 μ m



2074 2073 2072 2071 2070 2069 2068 2067 2066 2065 2064 2063 2062 2061

13 NOVEMBER 1975

11.5 μm

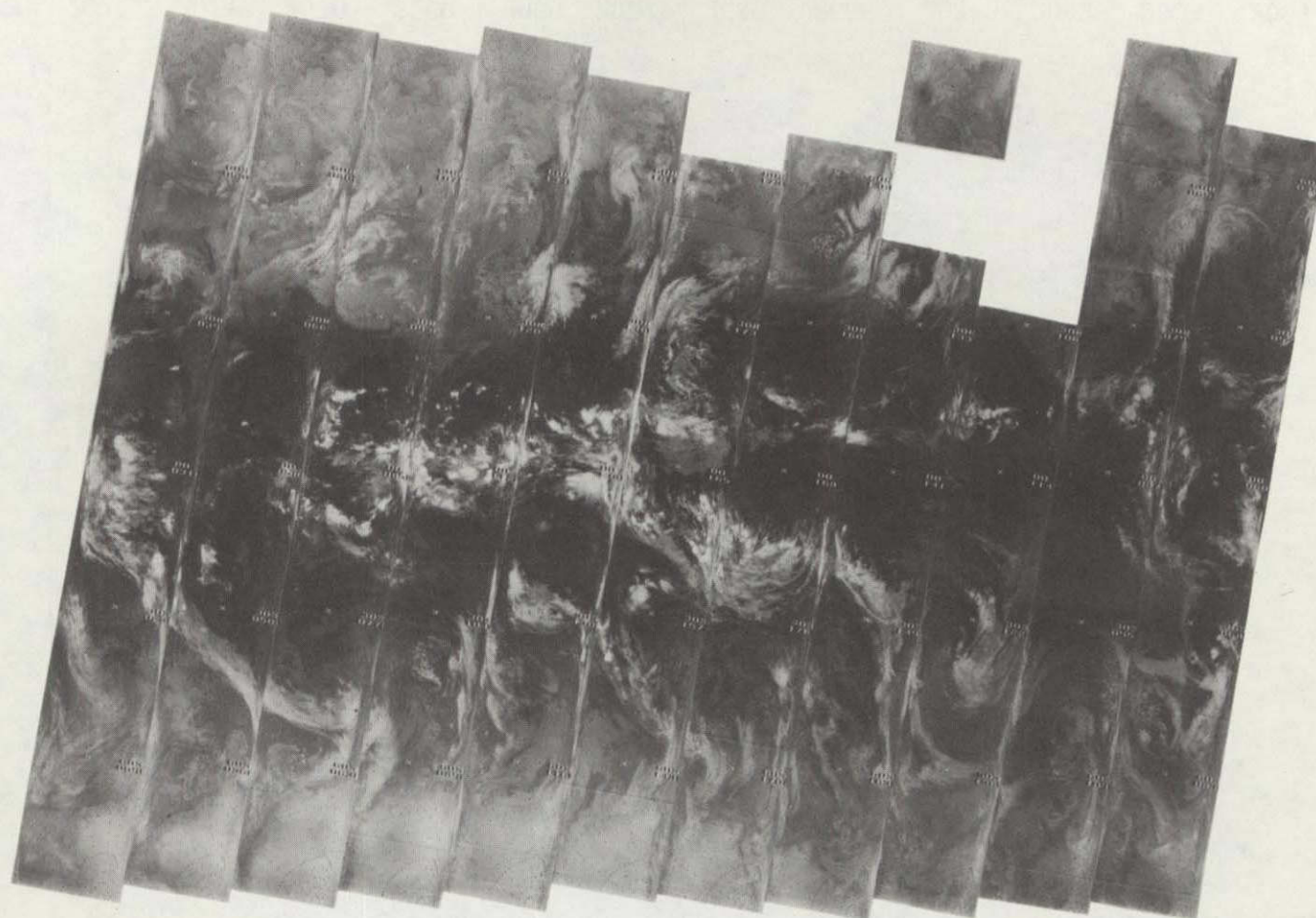


2074 2073 2072 2071 2070 2069 2068 2067 2066 2065 2064 2063 2062 2061

13 NOVEMBER 1975

6.7 μm

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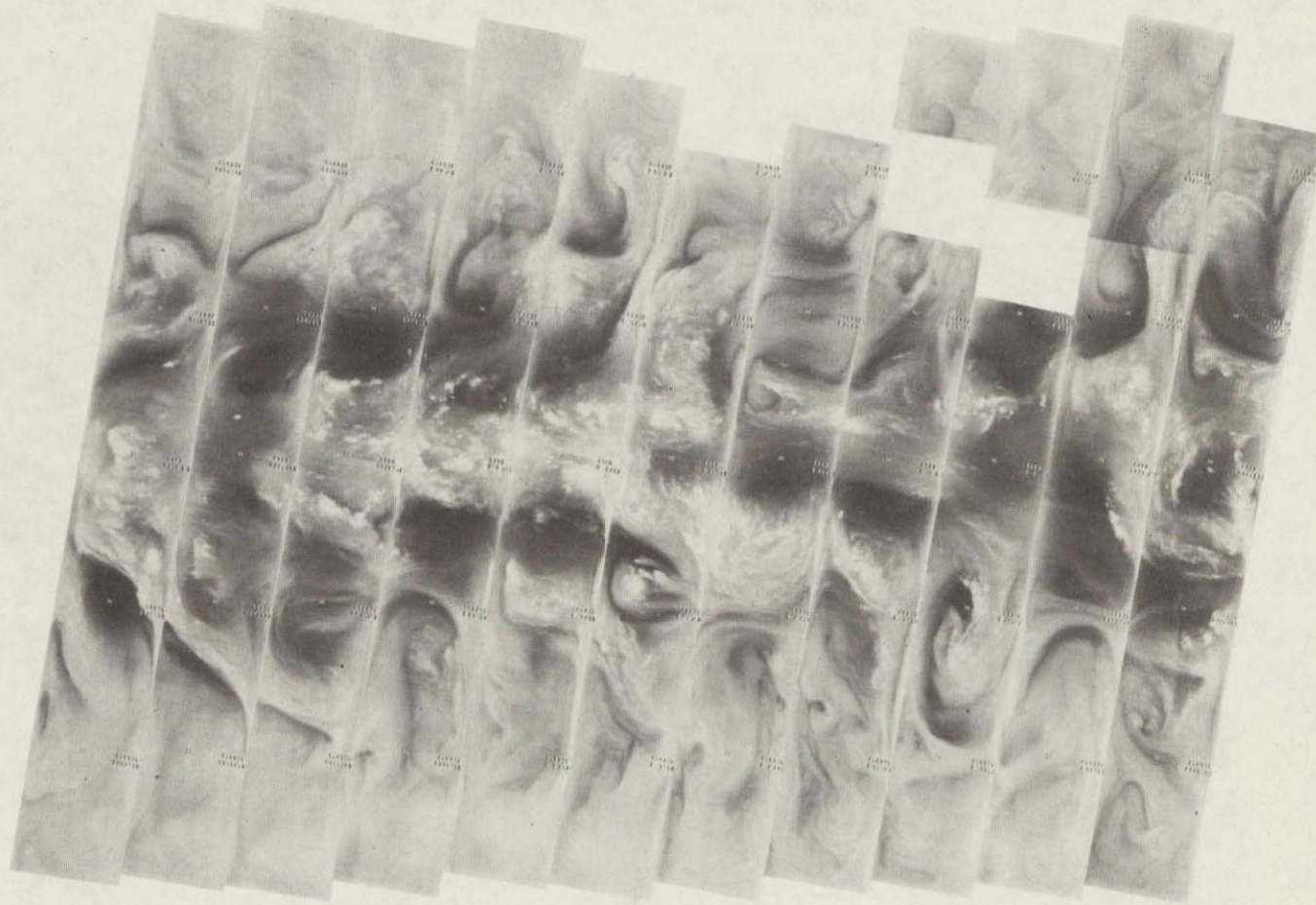
2087 2086 2085 2084 2083 2082 2081 2080 2079 2078 2077 2076 2075

14 NOVEMBER 1975

11.5 μ m

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4-33



2087 2086 2085 2084 2083 2082 2081 2080 2079 2078 2077 2076 2075

14 NOVEMBER 1975

6.7 μ m

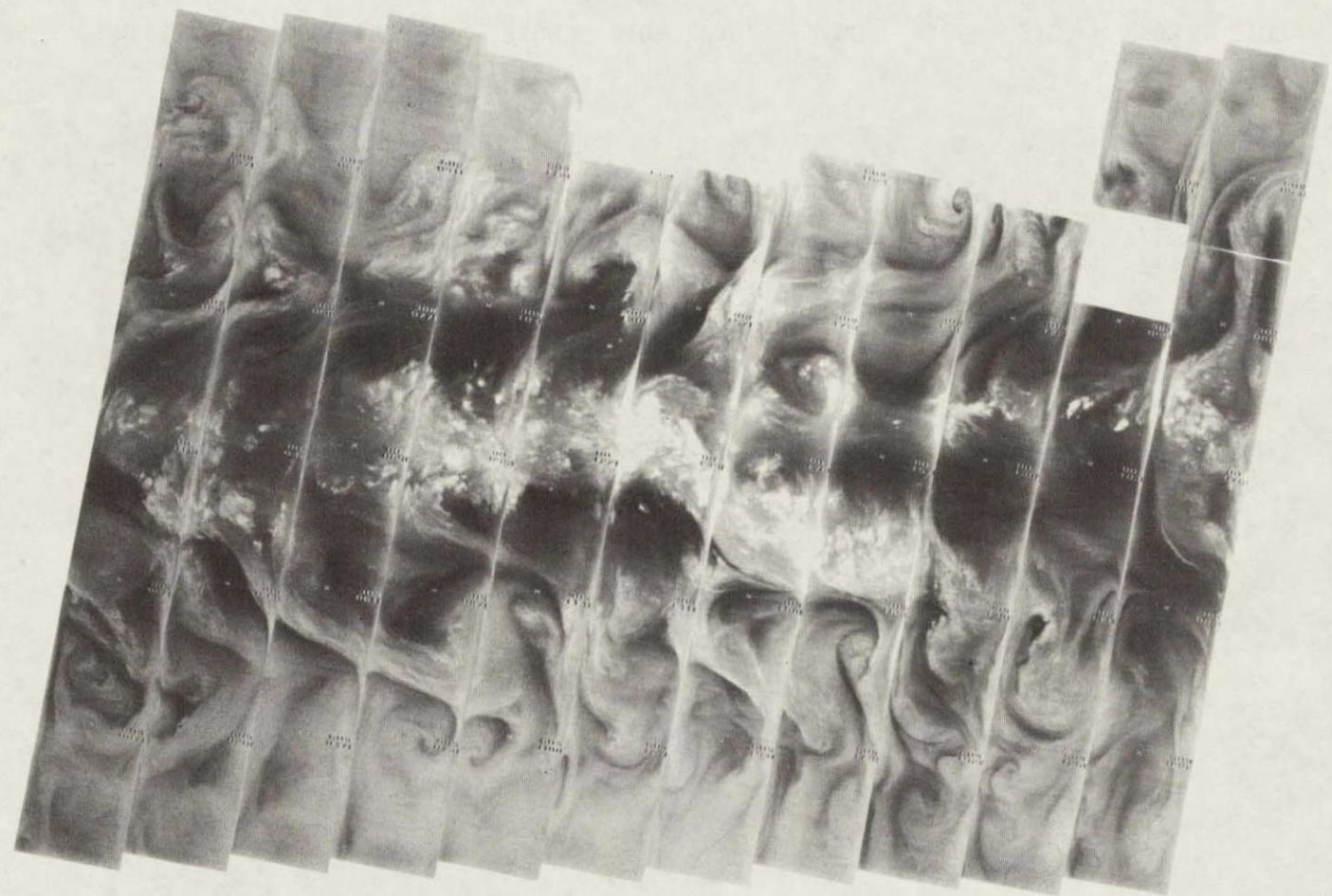


2101 2100 2099 2098 2097 2096 2095 2094 2093 2092 2091 2090 2089 2088

15 NOVEMBER 1975

11.5 μm

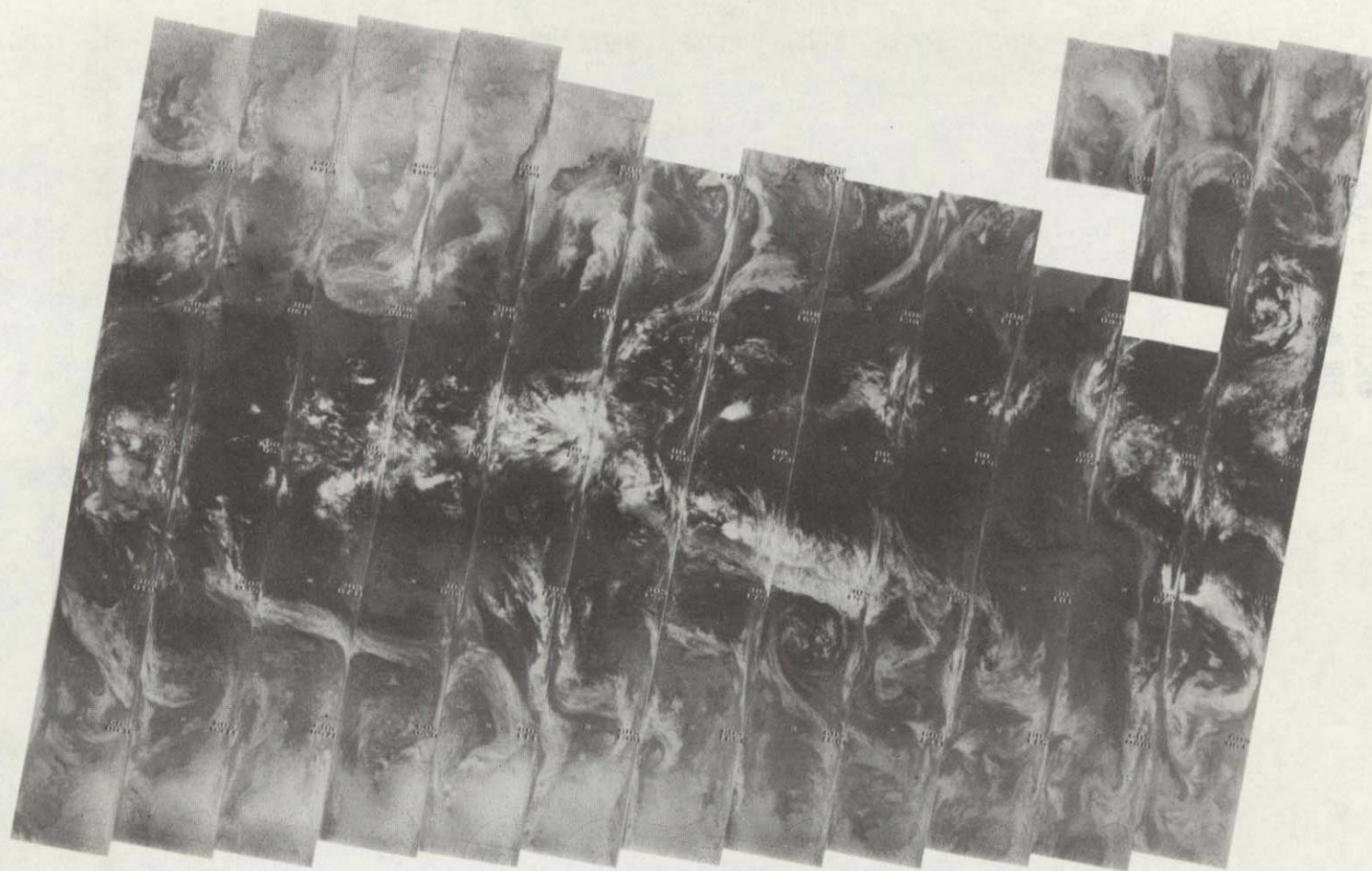
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2101 2100 2099 2098 2097 2096 2095 2094 2093 2092 2091 2090 2089 2088

15 NOVEMBER 1975

6.7 μm



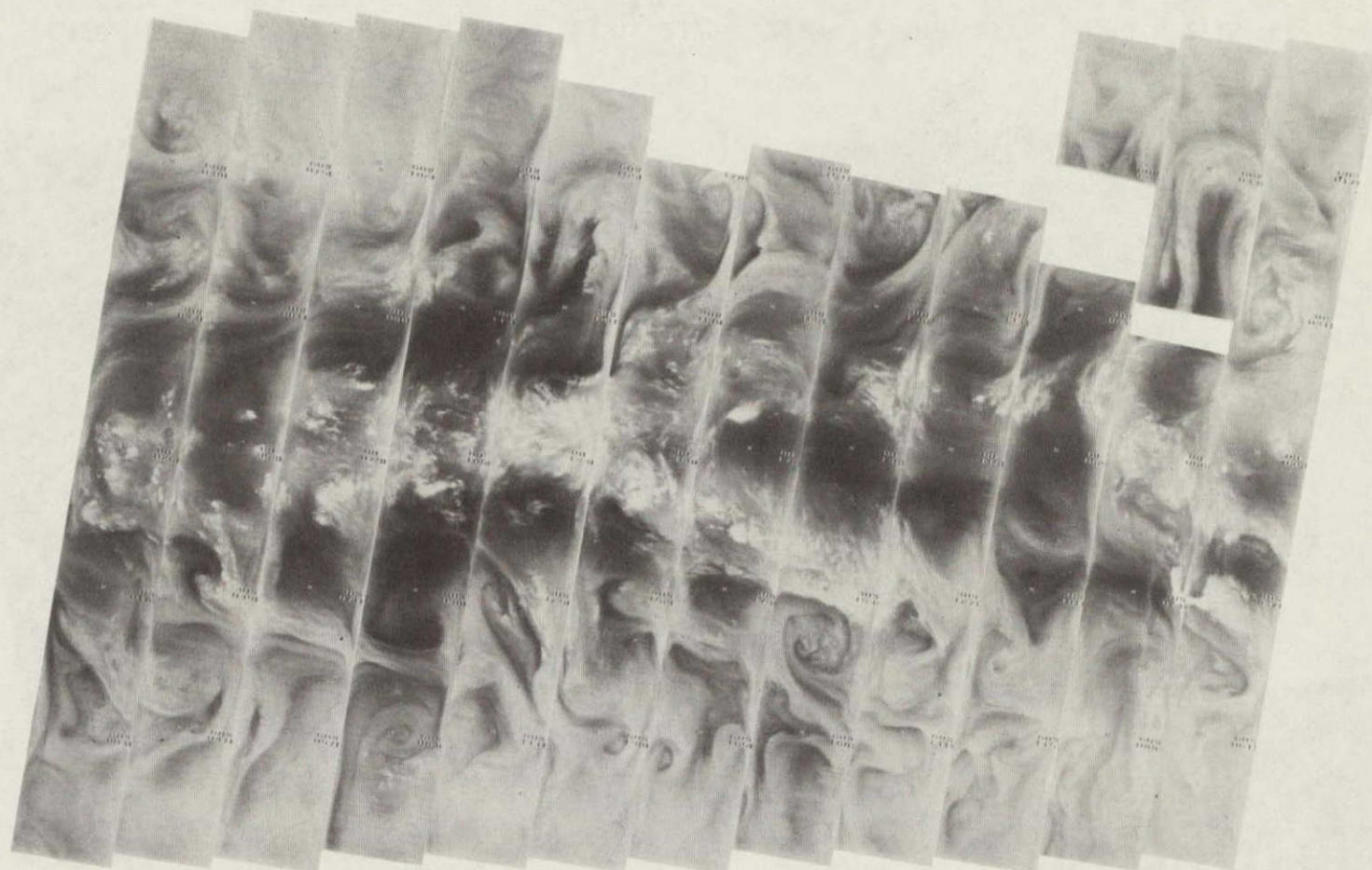
2114 2113 2112 2111 2110 2109 2108 2107 2106 2105 2104 2103 2102

16 NOVEMBER 1975

11.5 μm

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4-37



2114 2113 2112 2111 2110 2109 2108 2107 2106 2105 2104 2103 2102

16 NOVEMBER 1975

6.7 μm

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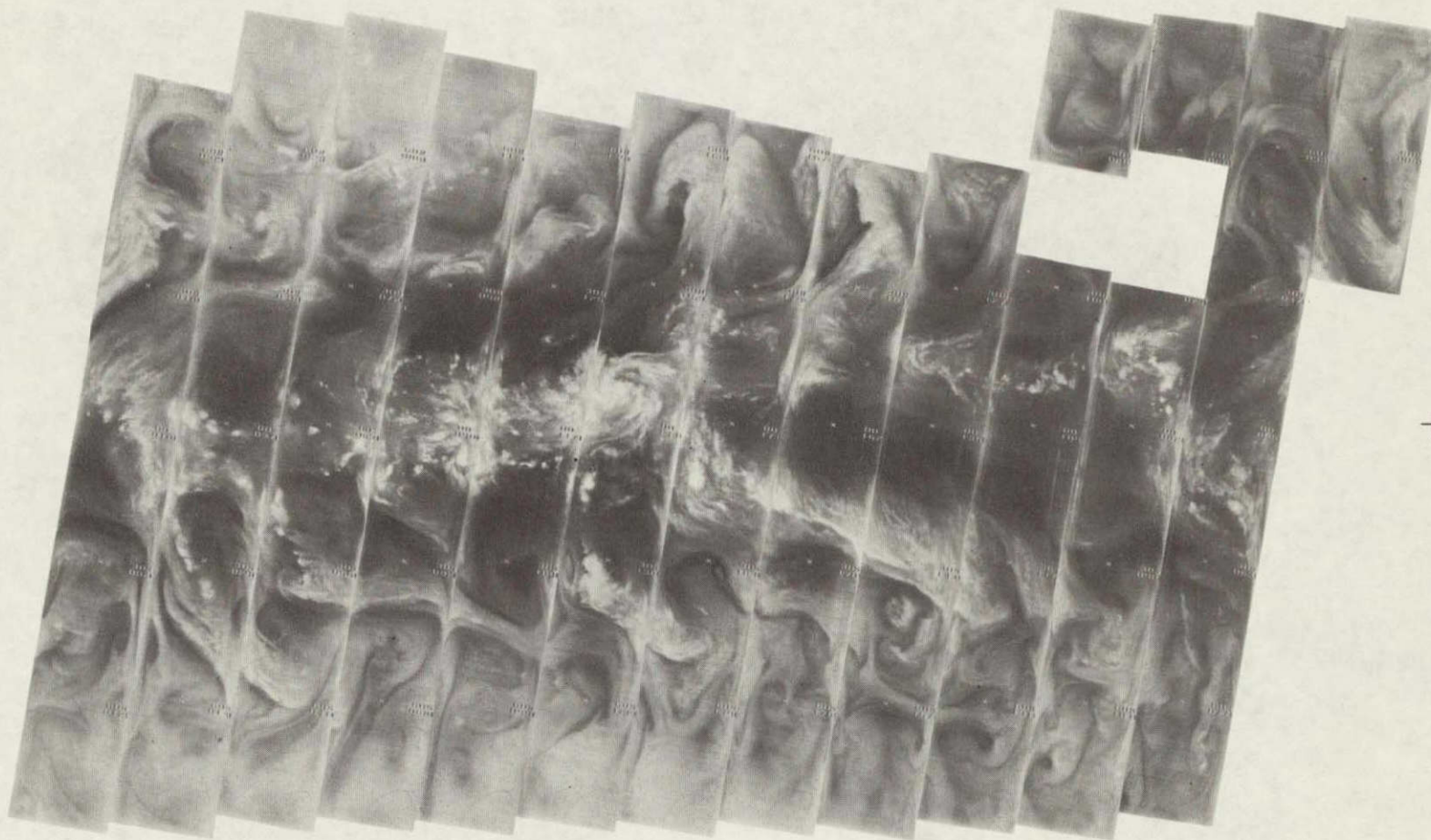
2127 2126 2125 2124 2123 2122 2121 2120 2119 2118 2117 2116 2115

17 NOVEMBER 1975

11.5 μm

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4-39

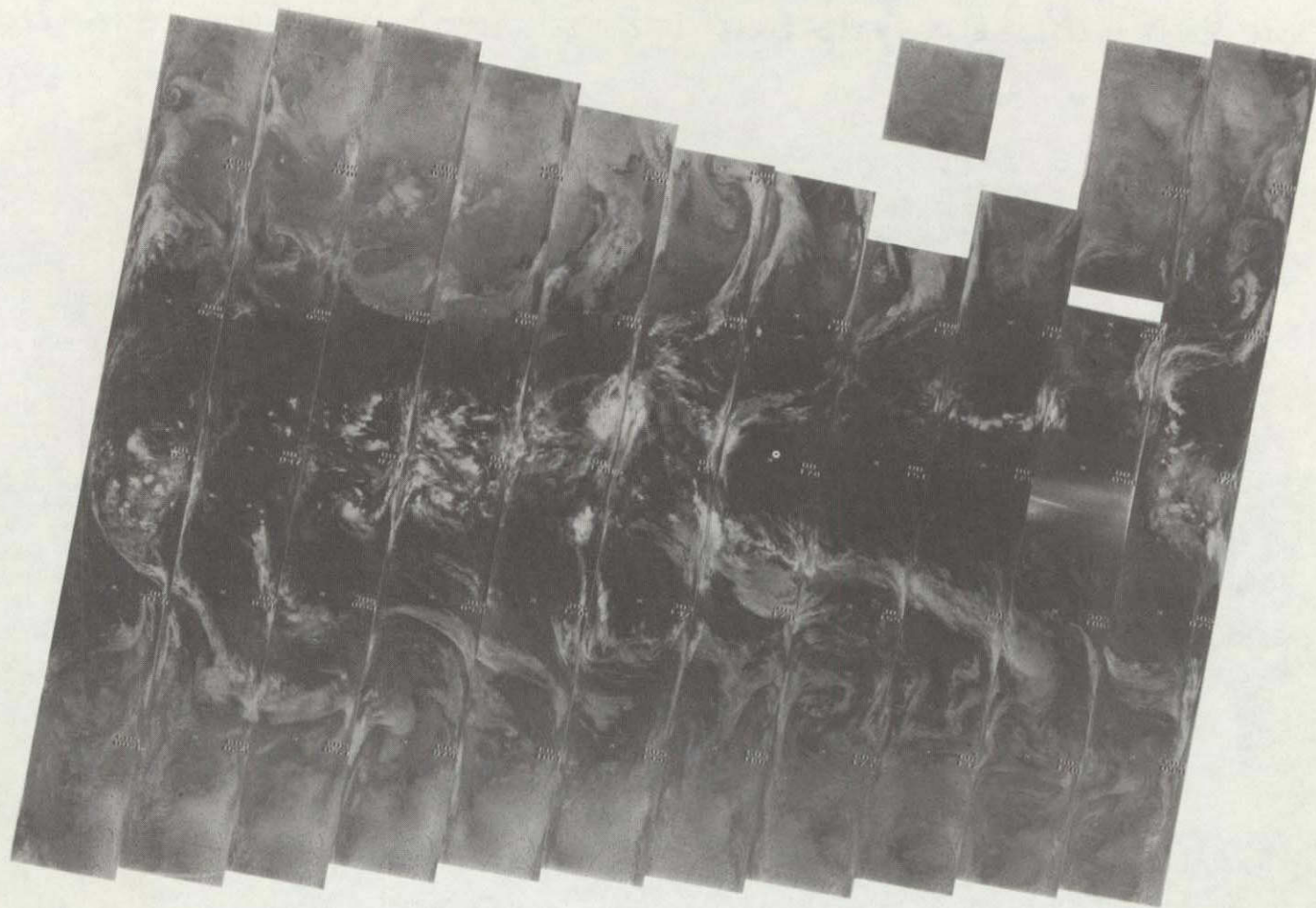


2127 2126 2125 2124 2123 2122 2121 2120 2119 2118 2117 2116 2115

17 NOVEMBER 1975

6.7 μm

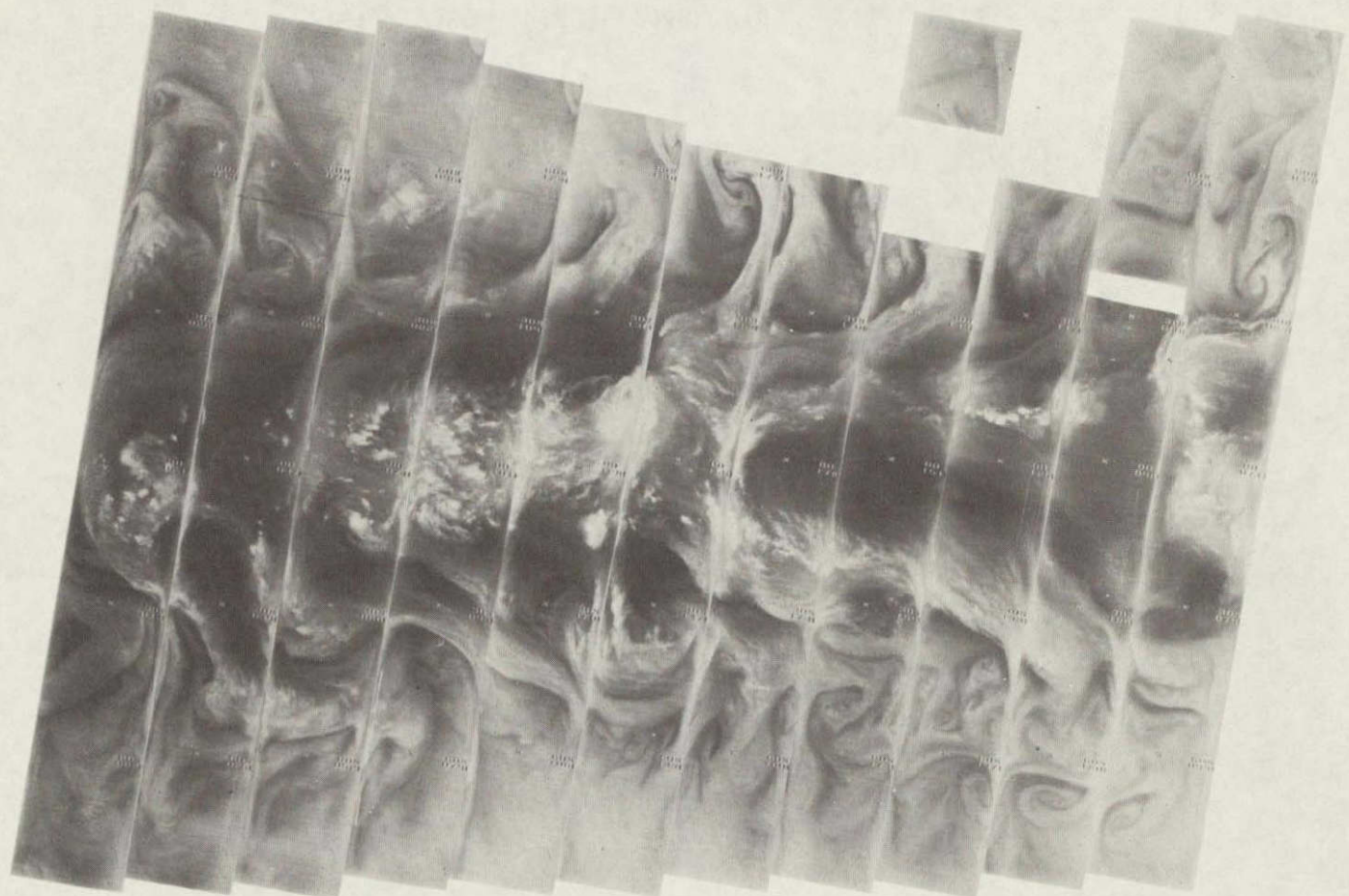
4-40



2141 2140 2139 2138 2137 2136 2135 2134 2133 2132 2131 2130 2129 2128

18 NOVEMBER 1975

11.5 μm



2141 2140 2139 2138 2137 2136 2135 2134 2133 2132 2131 2130 2129 2128

18 NOVEMBER 1975

6.7 μm

4-41

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4-42



2154 2153 2152 2151 2150 2149 2148 2147 2146 2145 2144 2143 2142

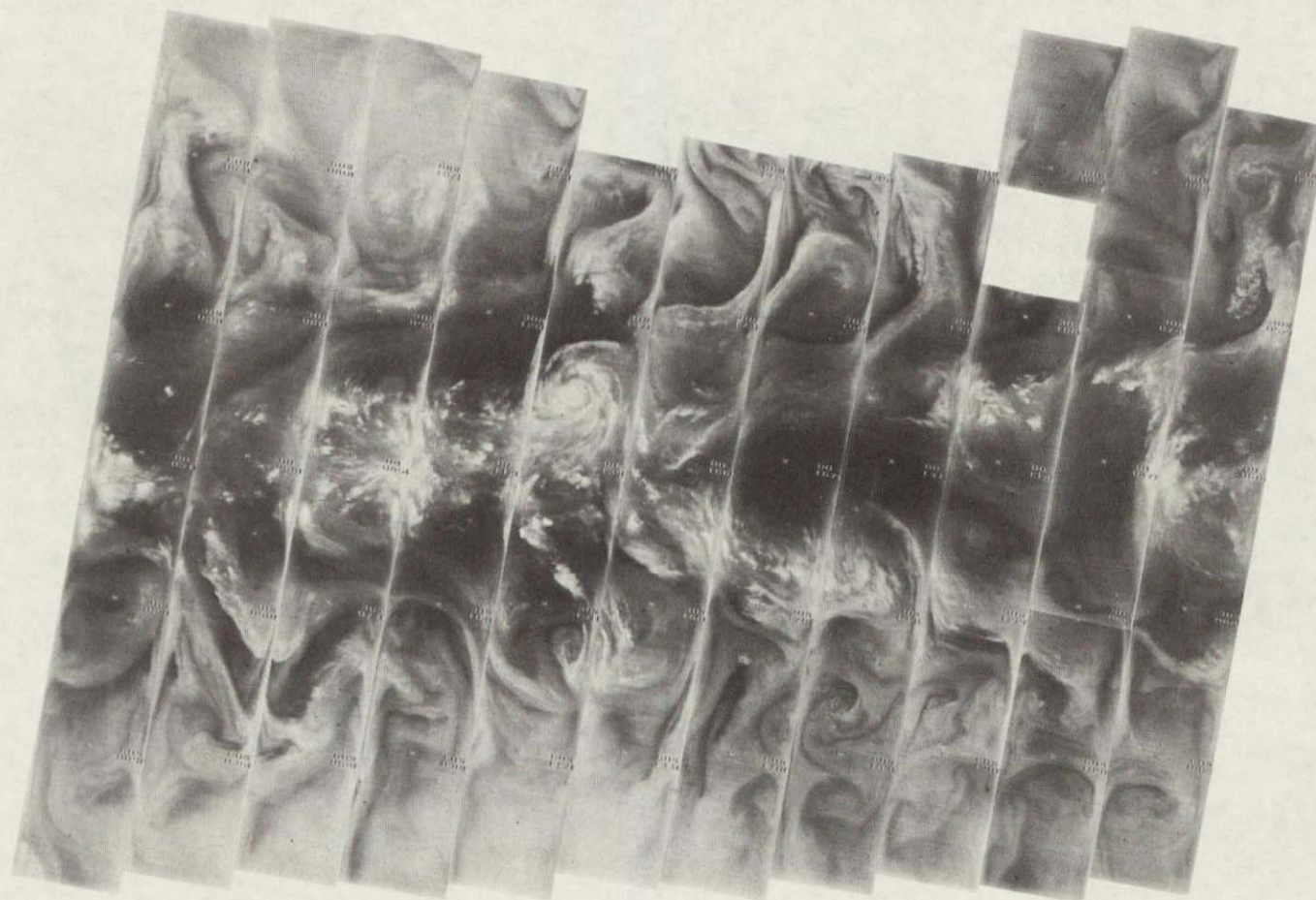
19 NOVEMBER 1975

11.5 μm

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QUALITY

4-43



2154 2153 2152 2151 2150 2149 2148 2147 2146 2145 2144 2143 2142

19 NOVEMBER 1975

6.7 μm

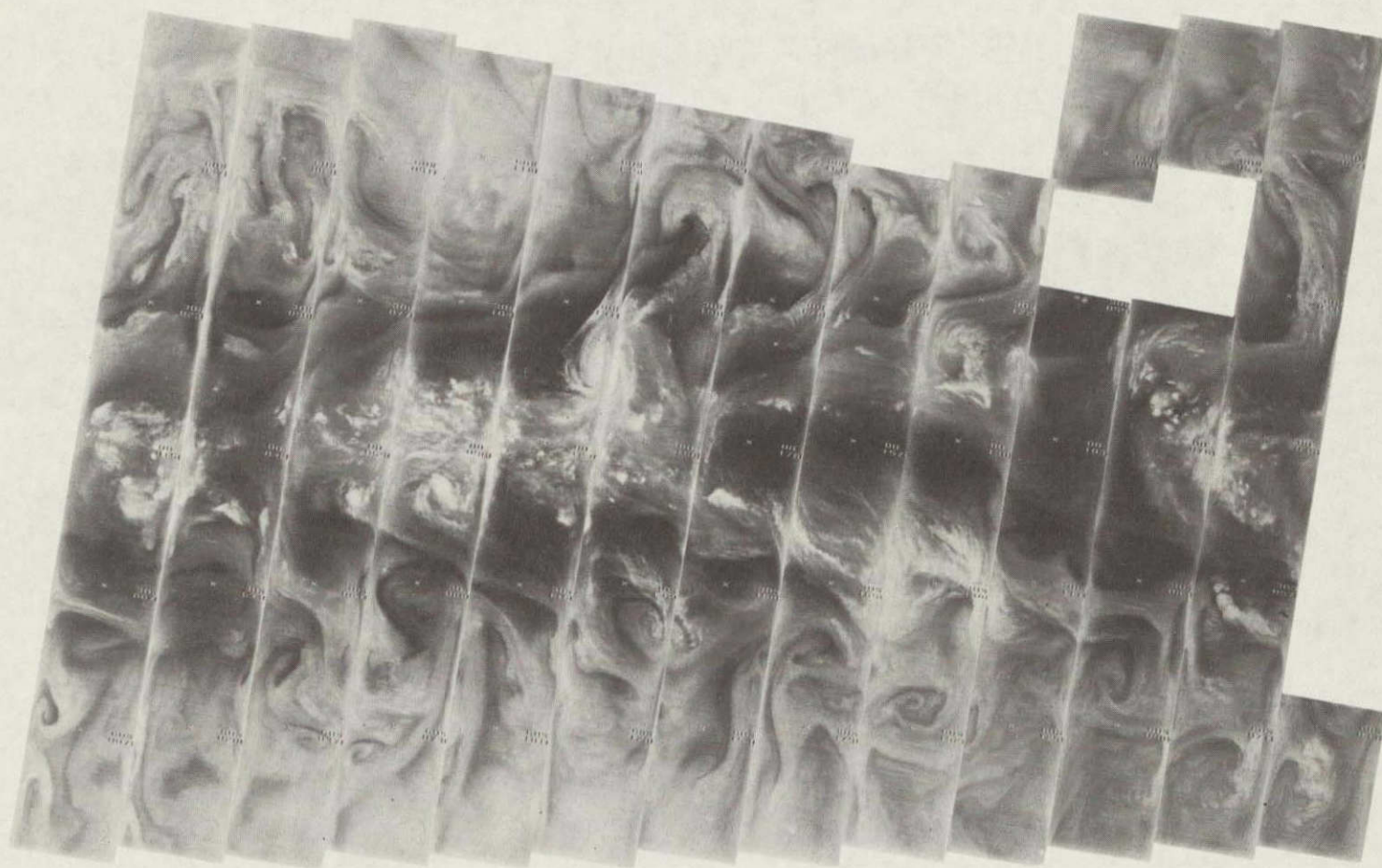
4-44



2168 2167 2166 2165 2164 2163 2162 2161 2160 2159 2158 2157 2156 2155

20 NOVEMBER 1975

11.5 μm



2168 2167 2166 2165 2164 2163 2162 2161 2160 2159 2158 2157 2156 2155

20 NOVEMBER 1975

6.7 μm

4-45

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2181 2180 2179 2178 2177 2176 2175 2174 2173 2172 2171 2170 2169

21 NOVEMBER 1975

11.5 μm

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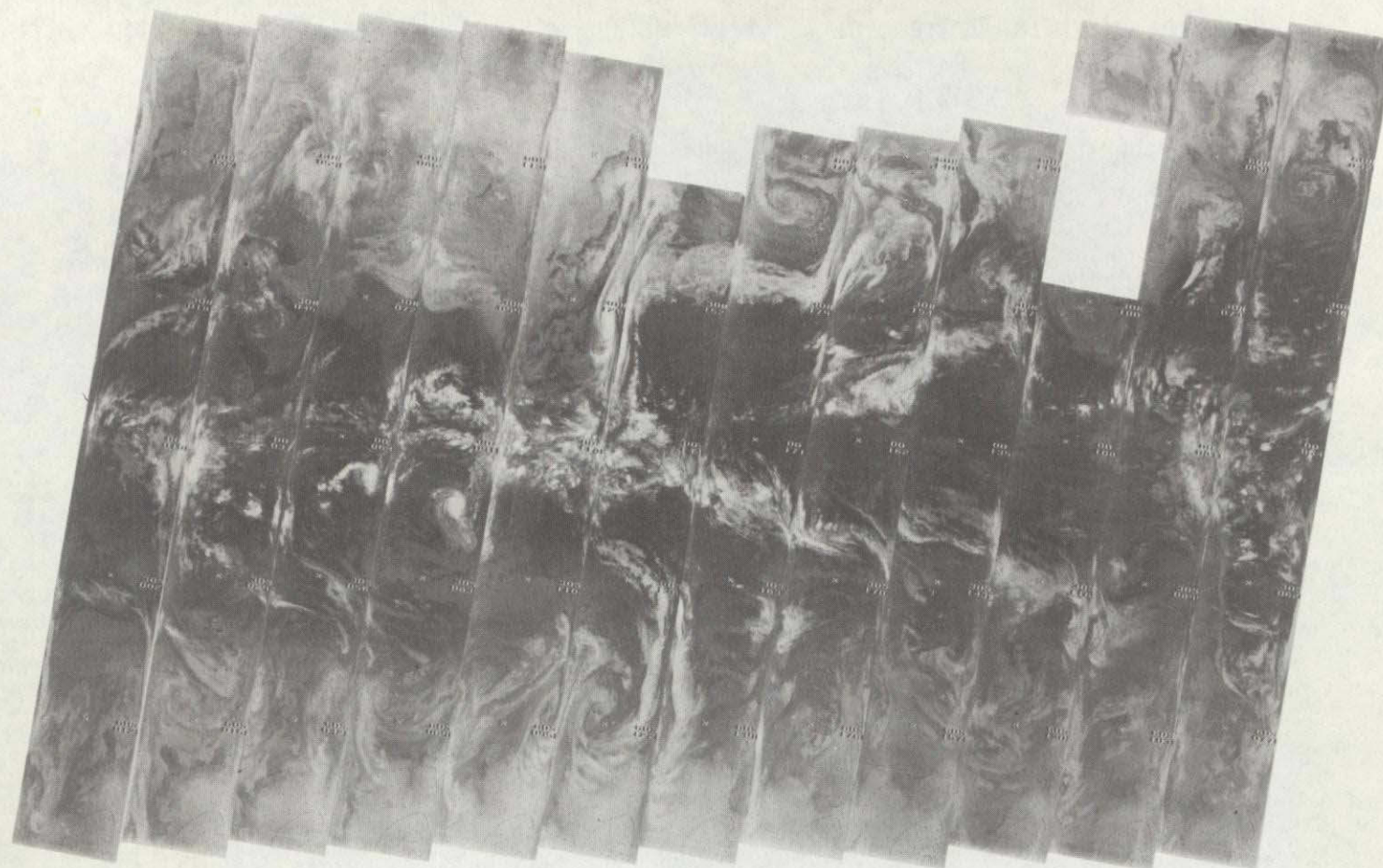
4-47



2181 2180 2179 2178 2177 2176 2175 2174 2173 2172 2171 2170 2169

21 NOVEMBER 1975

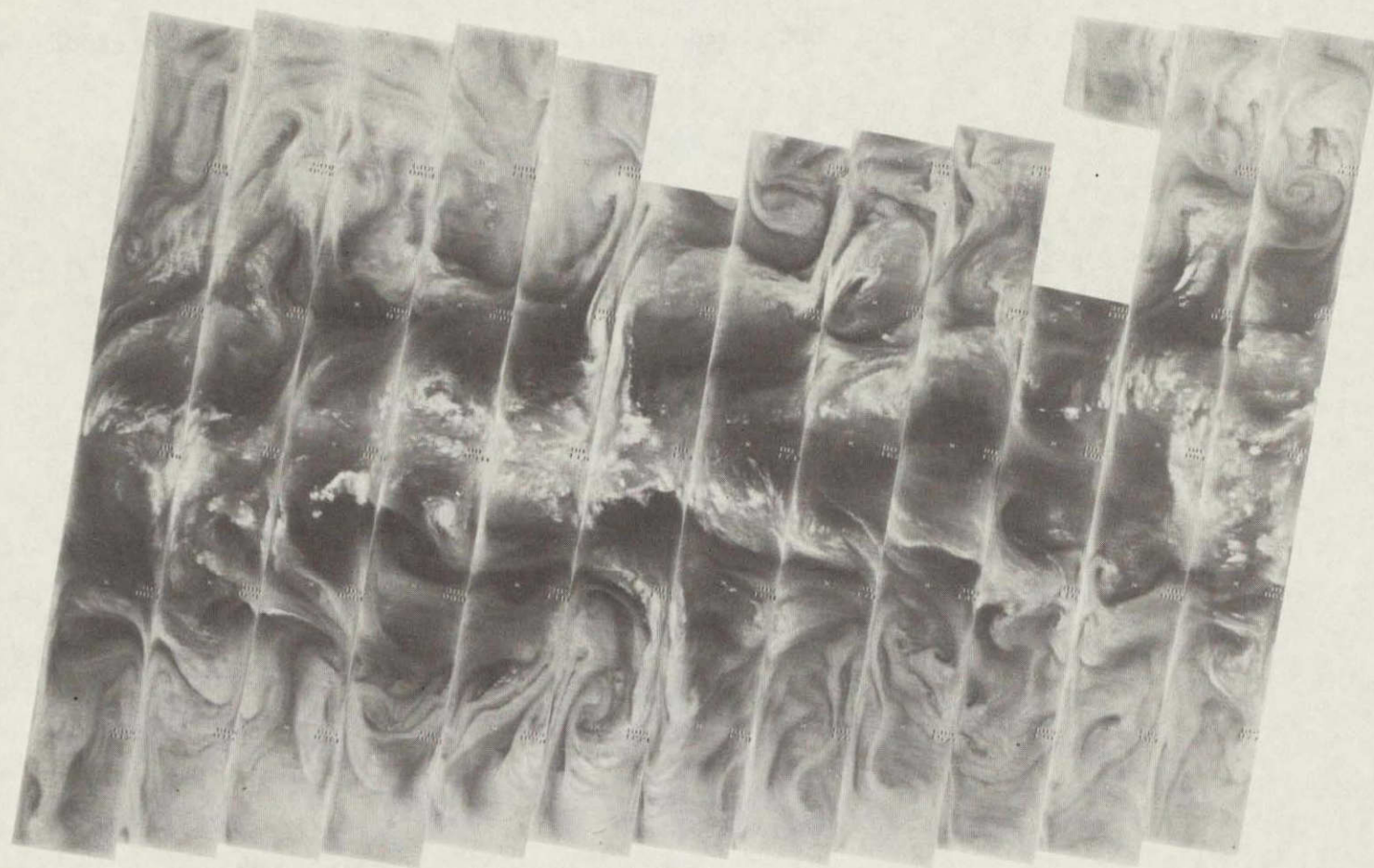
6.7 μm



2195 2194 2193 2192 2191 2190 2189 2188 2187 2186 2185 2184 2183 2182

22 NOVEMBER 1975

11.5 μm



2195 2194 2193 2192 2191 2190 2189 2188 2187 2186 2185 2184 2183 2182

22 NOVEMBER 1975

6.7 μm

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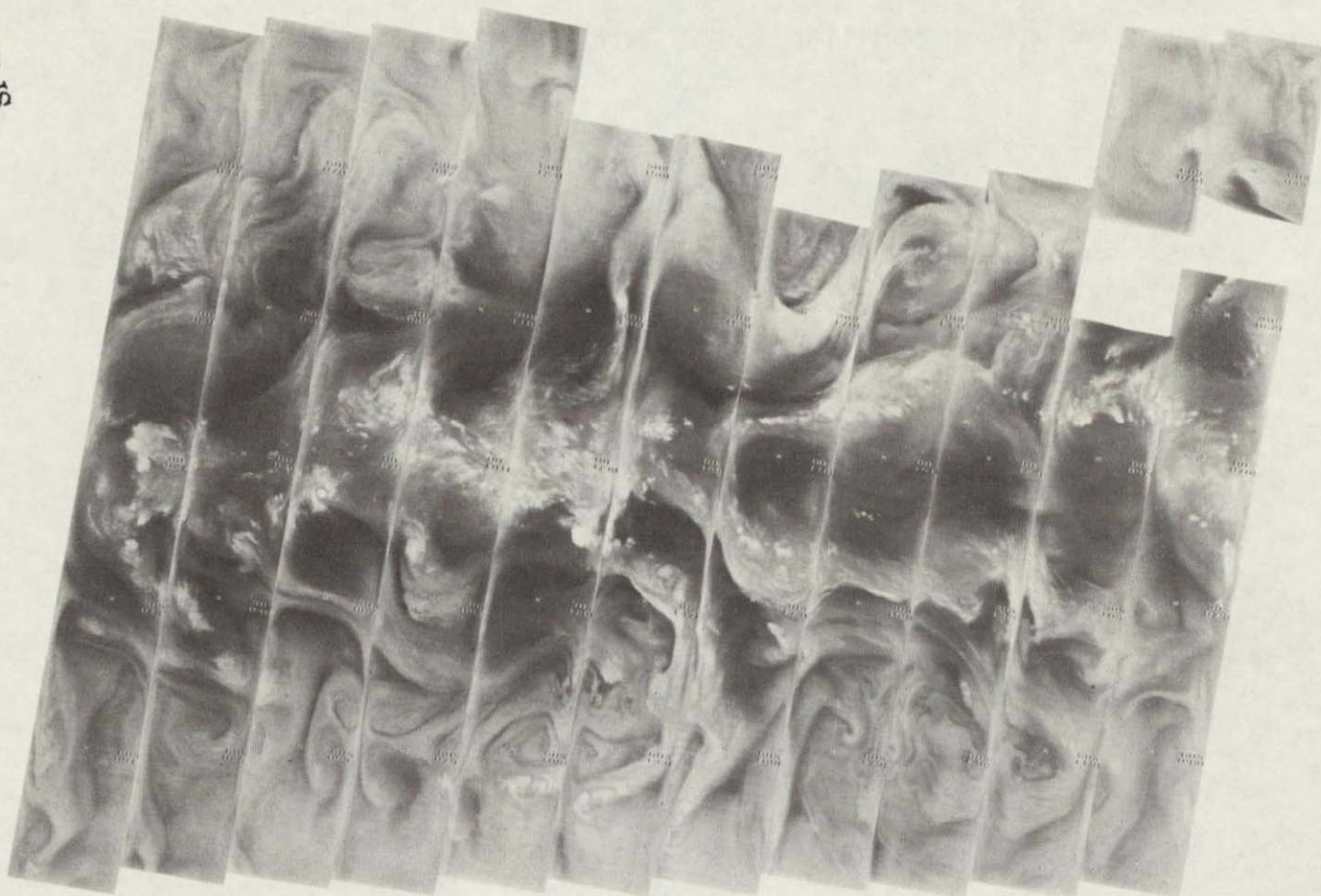


2208 2207 2206 2205 2204 2203 2202 2201 2200 2199 2198 2197 2196

23 NOVEMBER 1975

11.5 μm

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OF POOR QUALITY

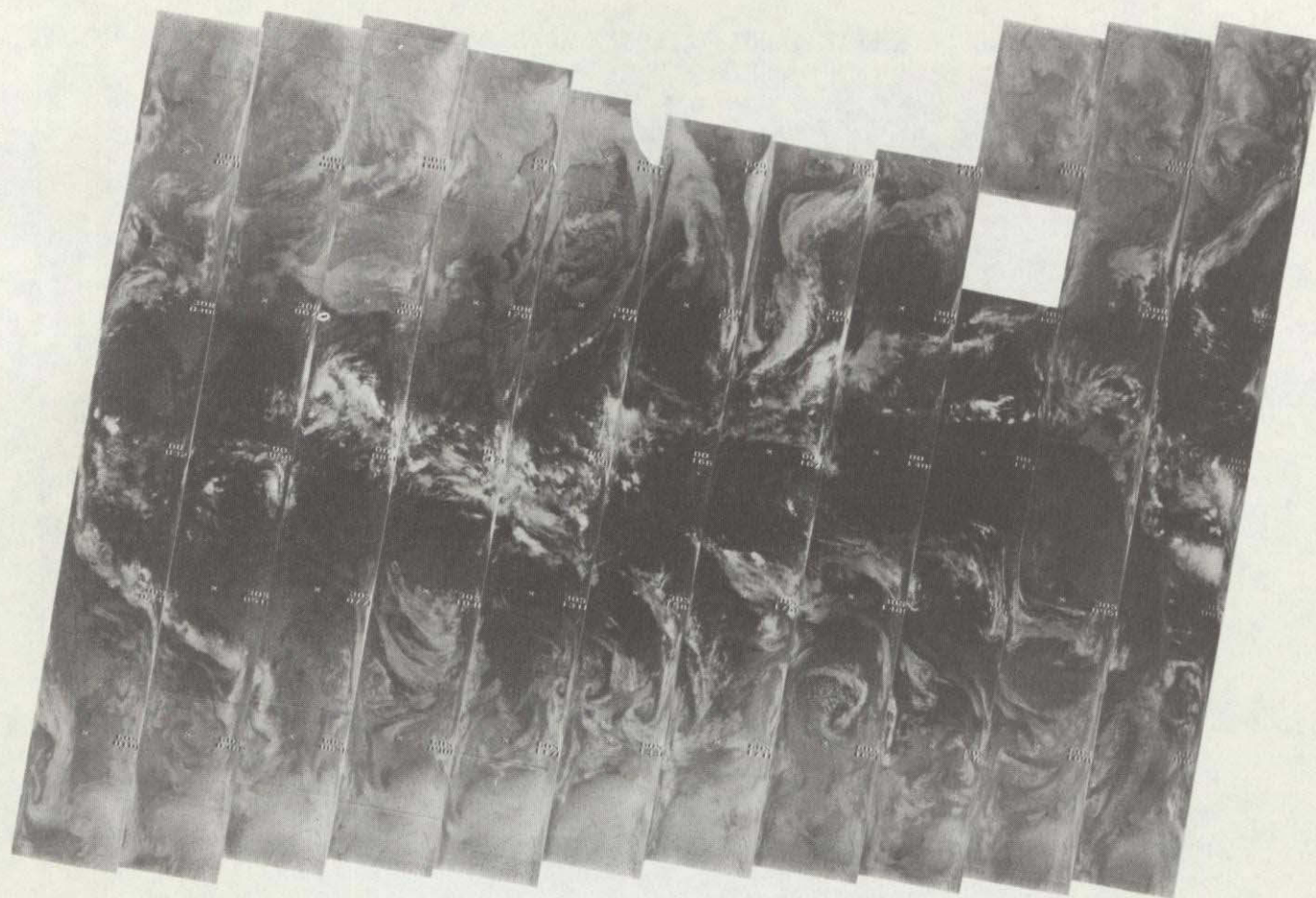


2208 2207 2206 2205 2204 2203 2202 2201 2200 2199 2198 2197 2196

23 NOVEMBER 1975

6.7 μ m

4-52

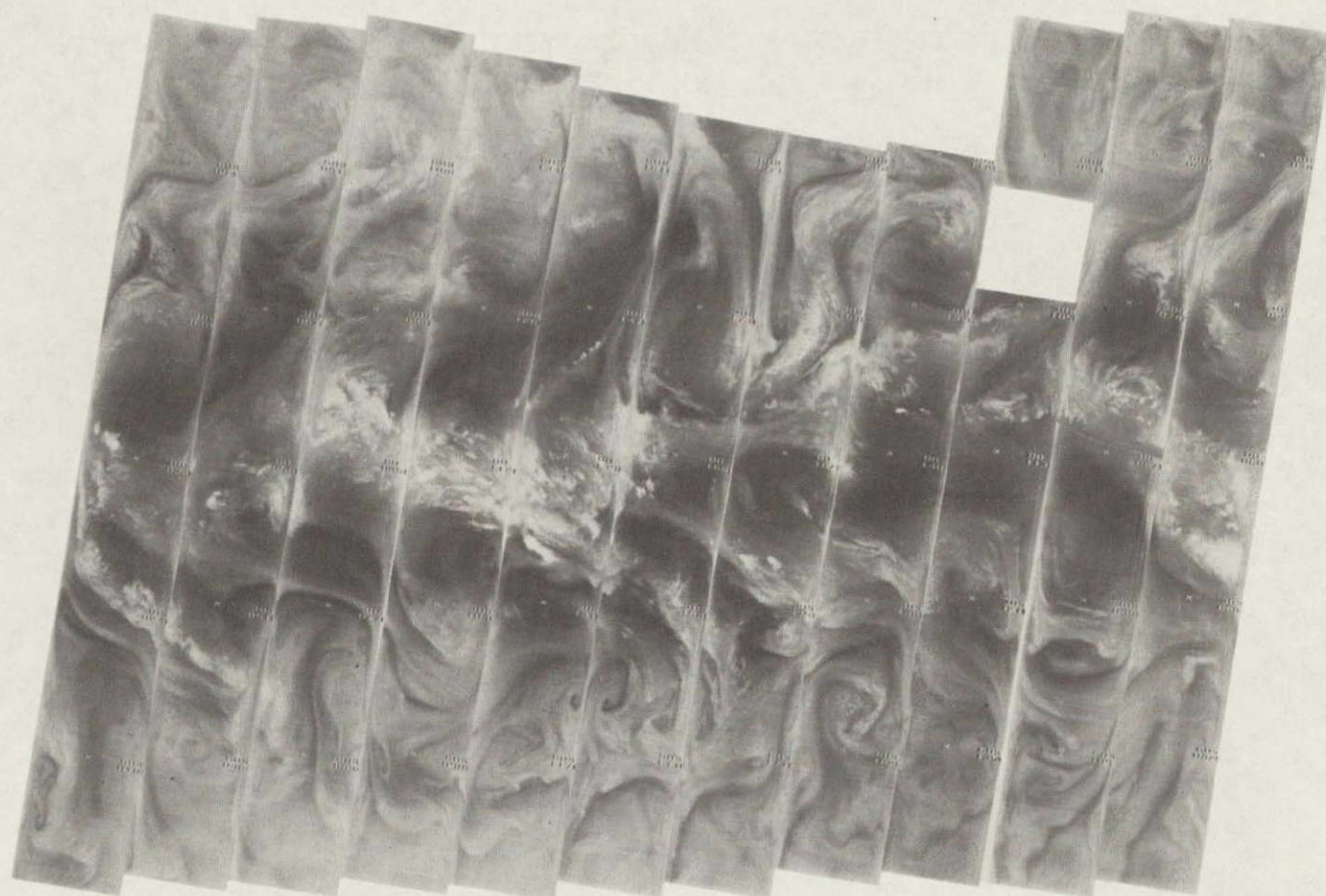


2221 2220 2219 2218 2217 2216 2215 2214 2213 2212 2211 2210 2209

24 NOVEMBER 1975

11.5 μm

4-53

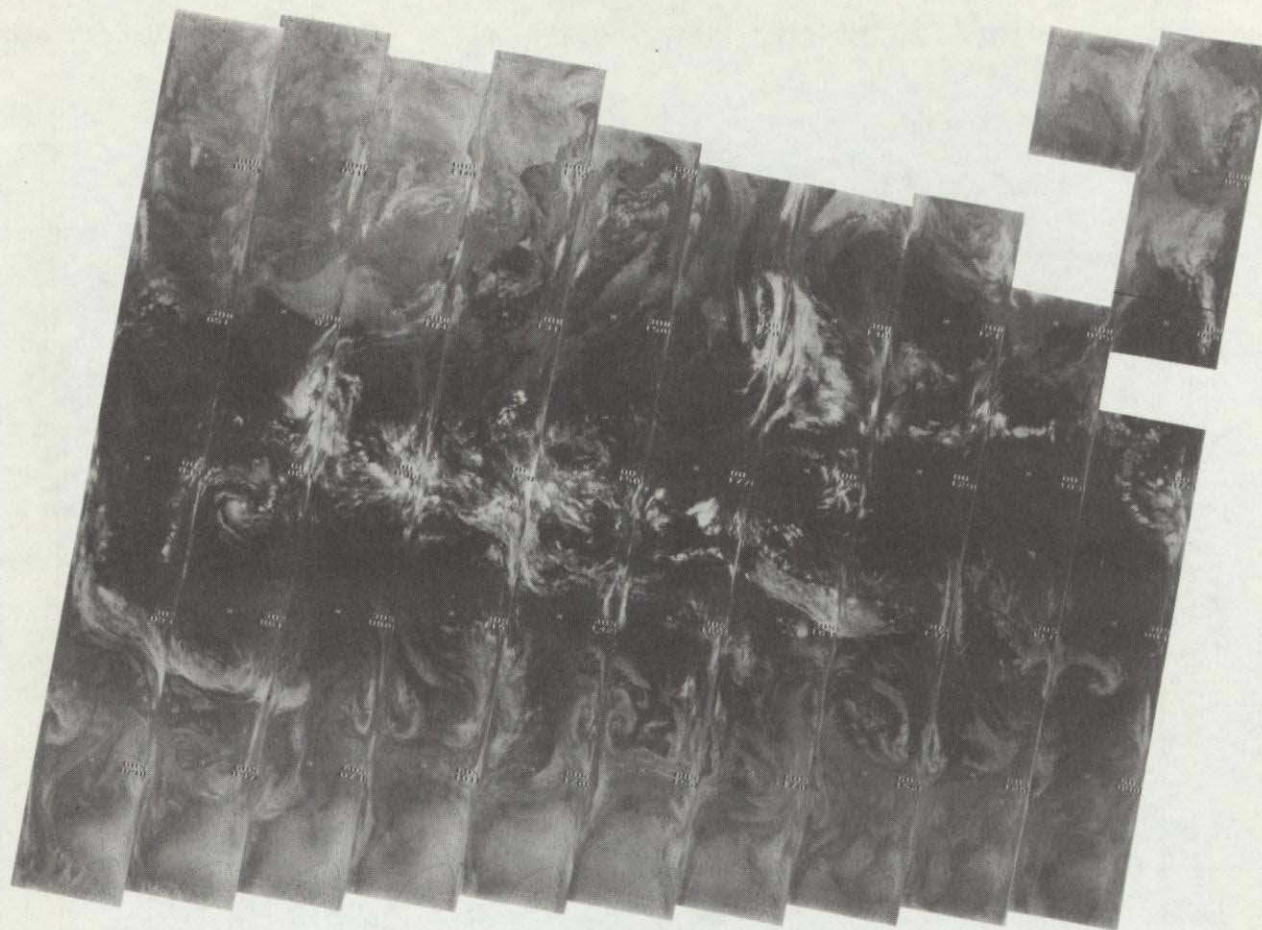


2221 2220 2219 2218 2217 2216 2215 2214 2213 2212 2211 2210 2209

24 NOVEMBER 1975

6.7 μm

4-54



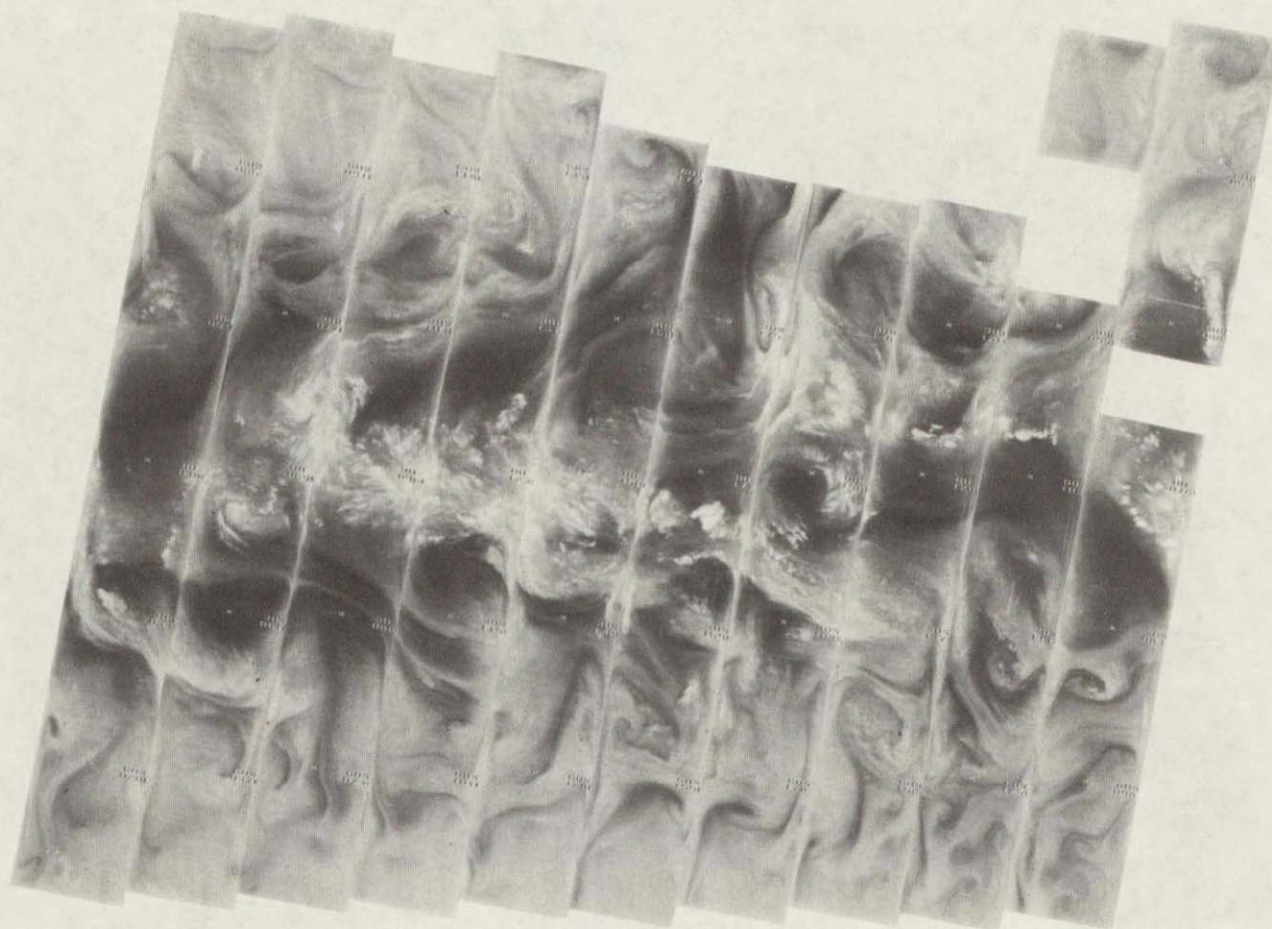
2235 2234 2233 2232 2231 2230 2229 2228 2227 2226 2225 2224 2223 2222

25 NOVEMBER 1975

11.5 μm

4-55

+



21 NOV 1975 00:00:00
ORIGINAL PAGE 12

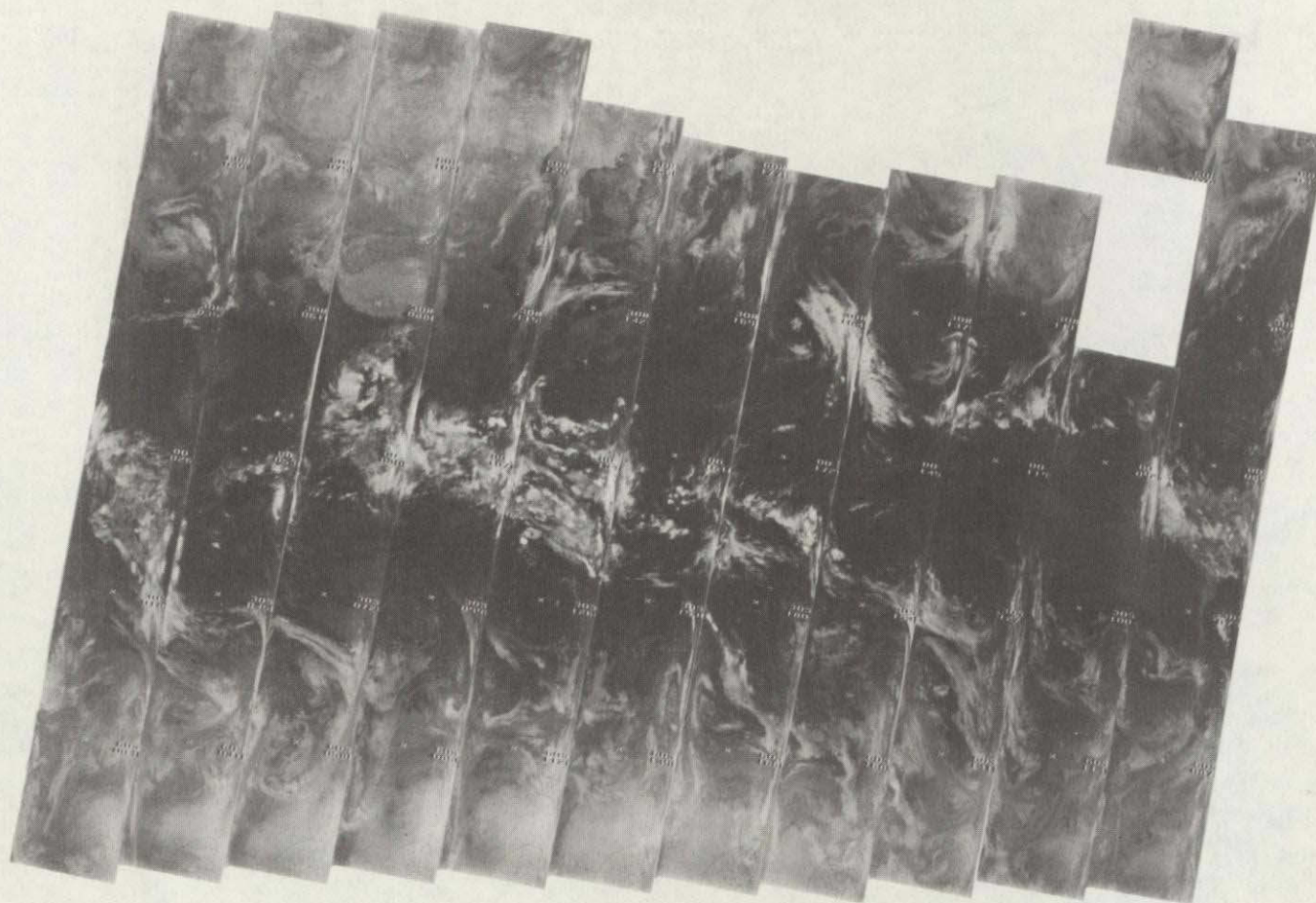
+

2235 2234 2233 2232 2231 2230 2229 2228 2227 2226 2225 2224 2223 2222

25 NOVEMBER 1975

6.7 μm

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OF POOR QUALITY

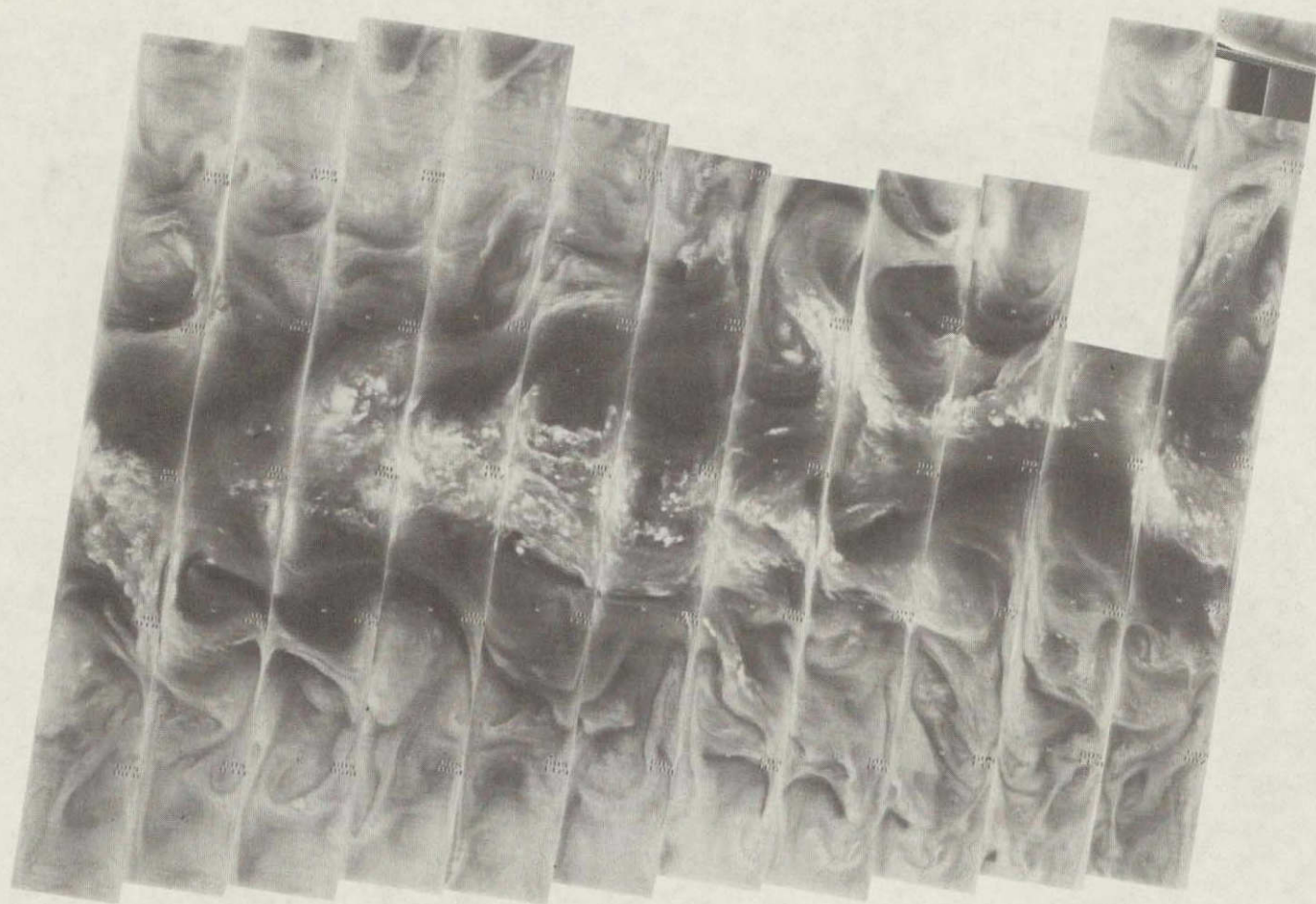


2248 2247 2246 2245 2244 2243 2242 2241 2240 2239 2238 2237 2236

26 NOVEMBER 1975

11.5 μ m

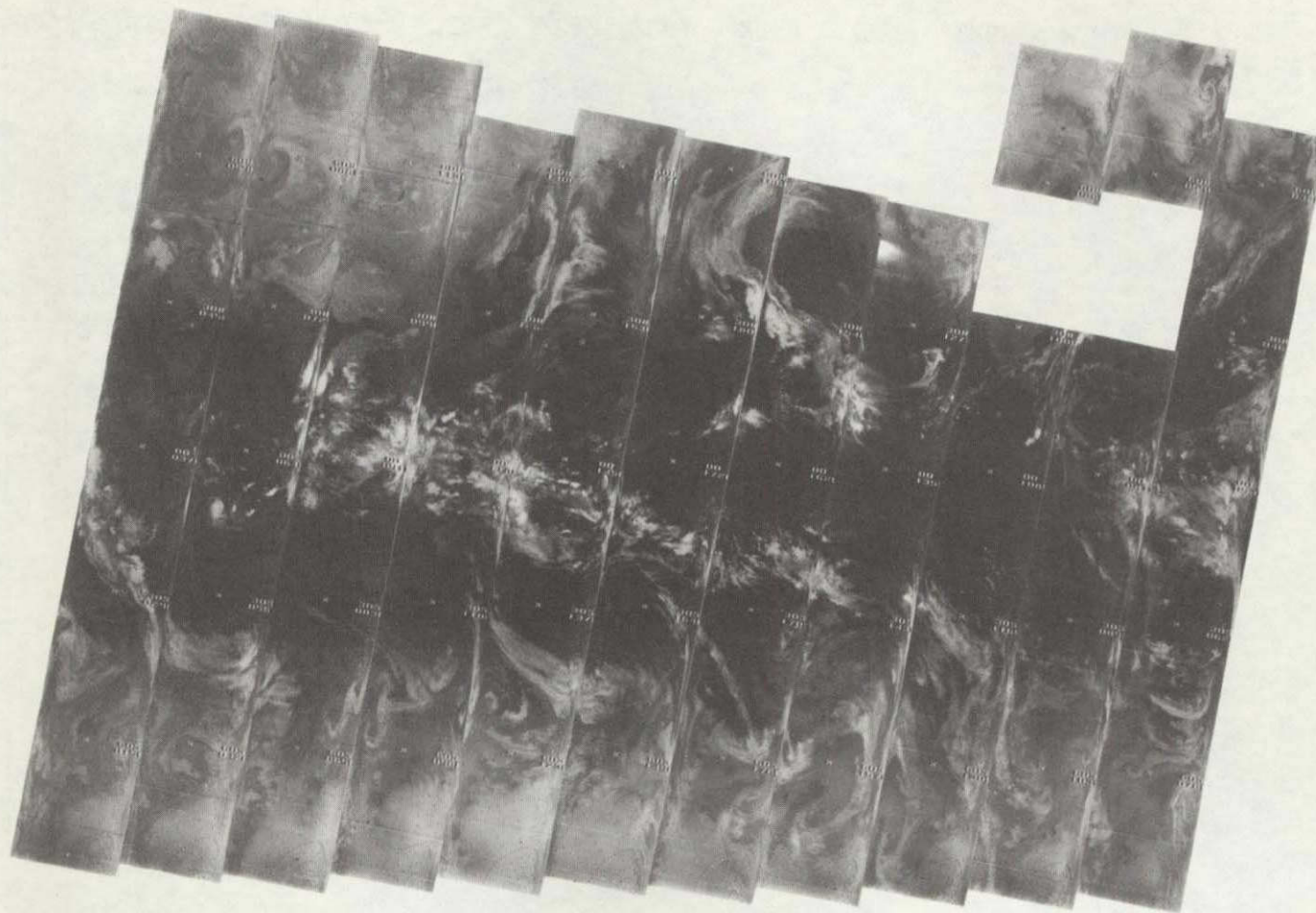
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2248 2247 2246 2245 2244 2243 2242 2241 2240 2239 2238 2237 2236

26 NOVEMBER 1975

6.7 μm

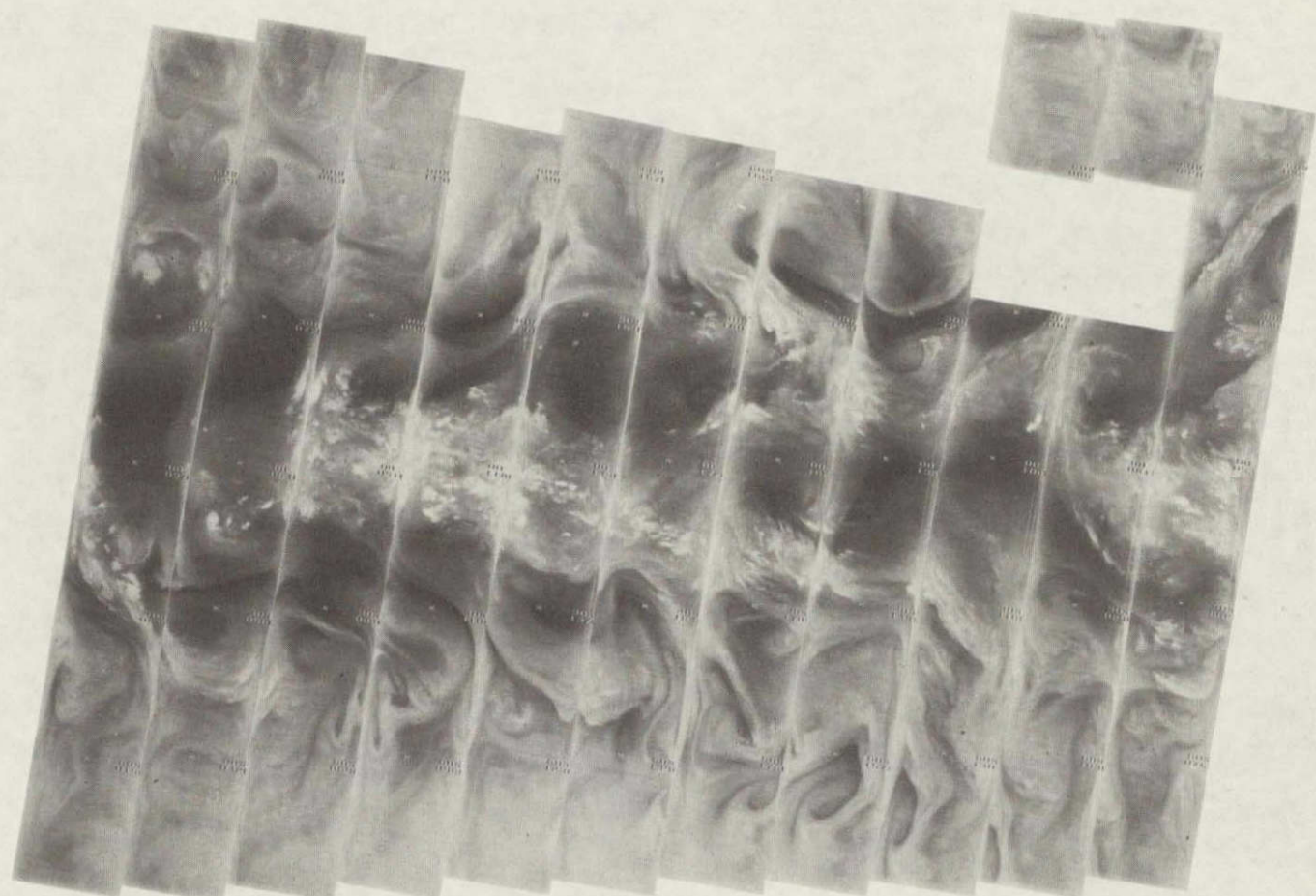


2262 2261 2260 2259 2258 2257 2256 2255 2254 2253 2252 2251 2250 2249

27 NOVEMBER 1975

11.5 μ m

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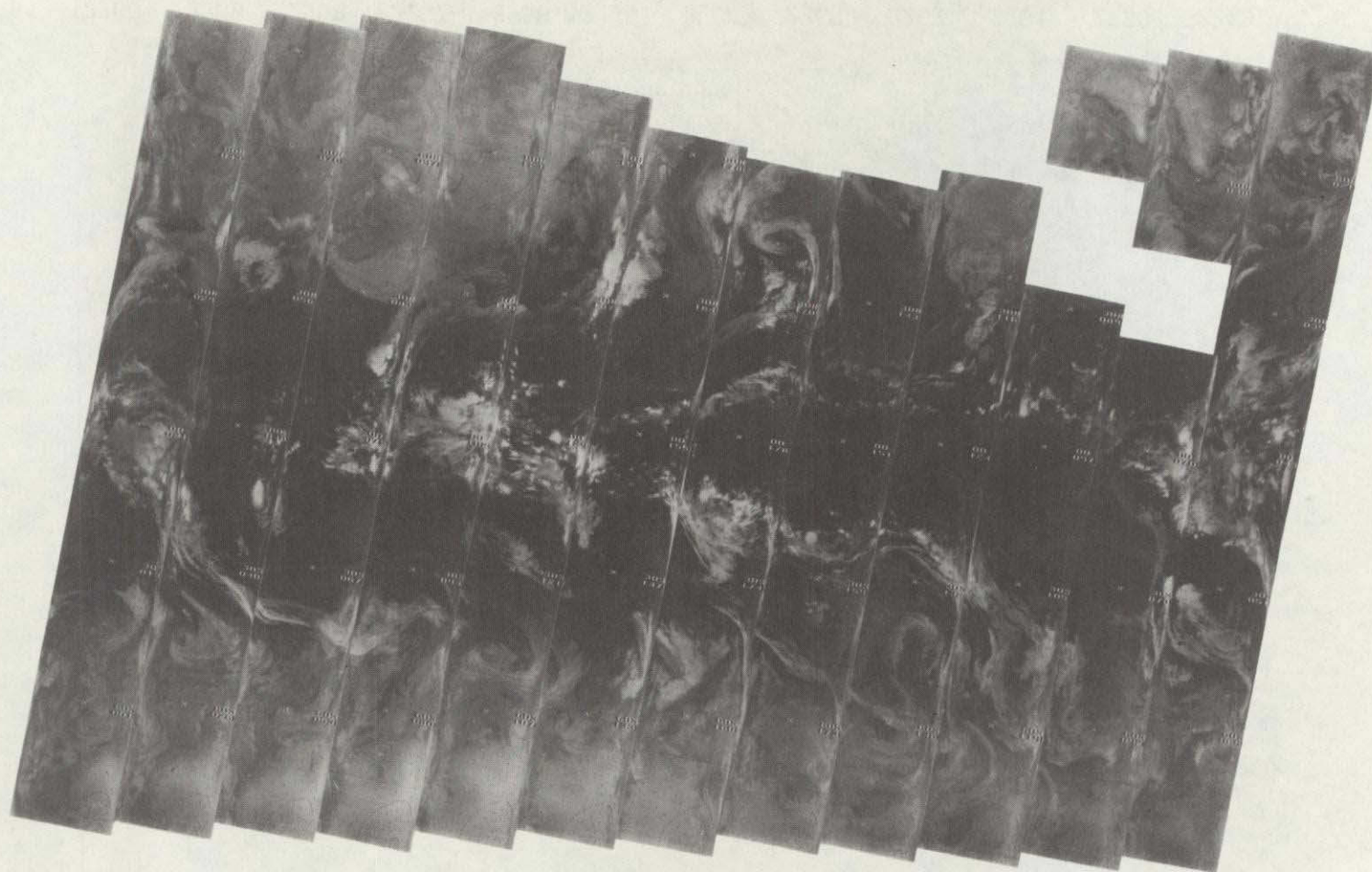


2262 2261 2260 2259 2258 2257 2256 2255 2254 2253 2252 2251 2250 2249

27 NOVEMBER 1975

6.7 μ m

4-60

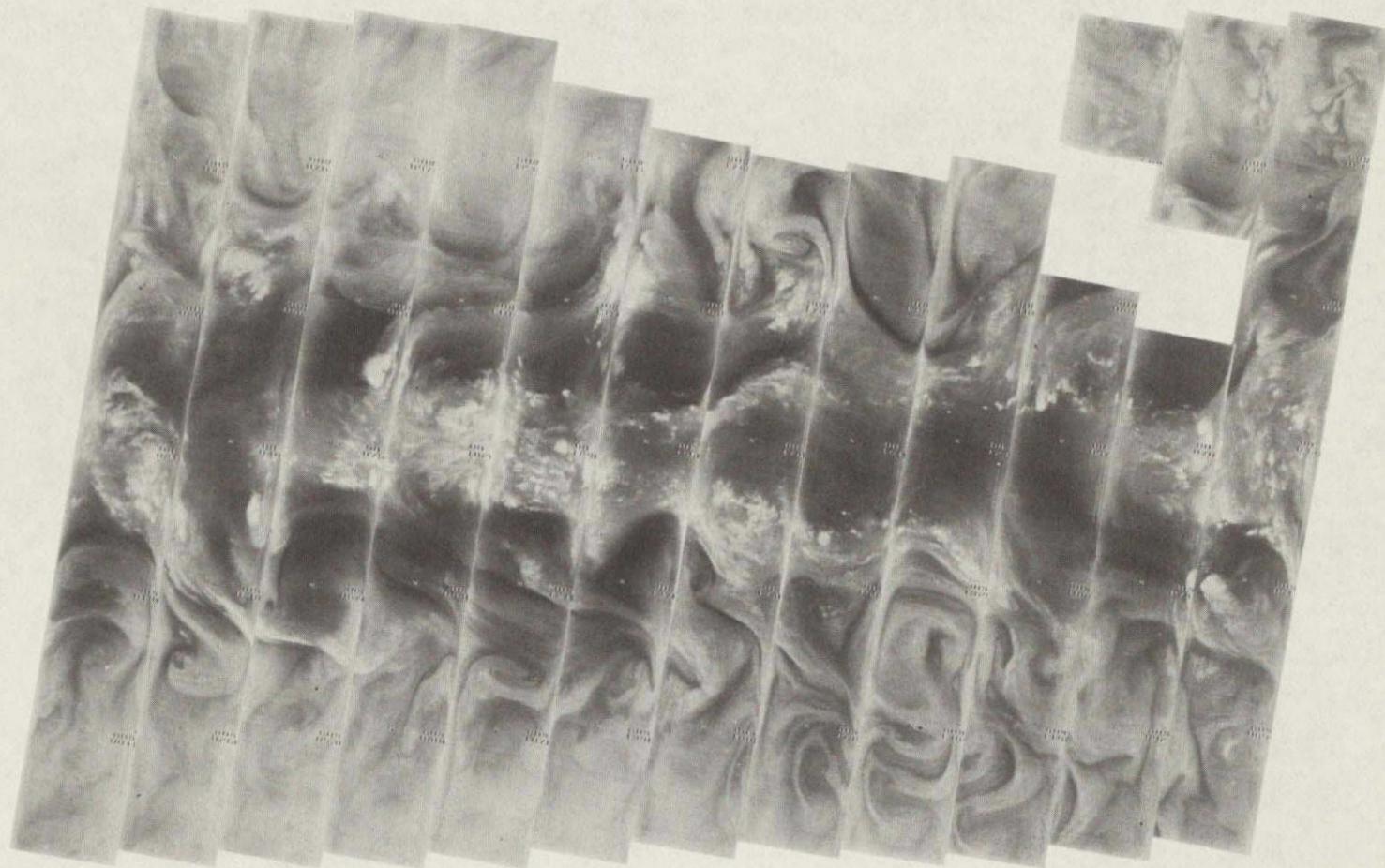


2275 2274 2273 2272 2271 2270 2269 2268 2267 2266 2265 2264 2263

28 NOVEMBER 1975

11.5 μm

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OF POOR QUALITY

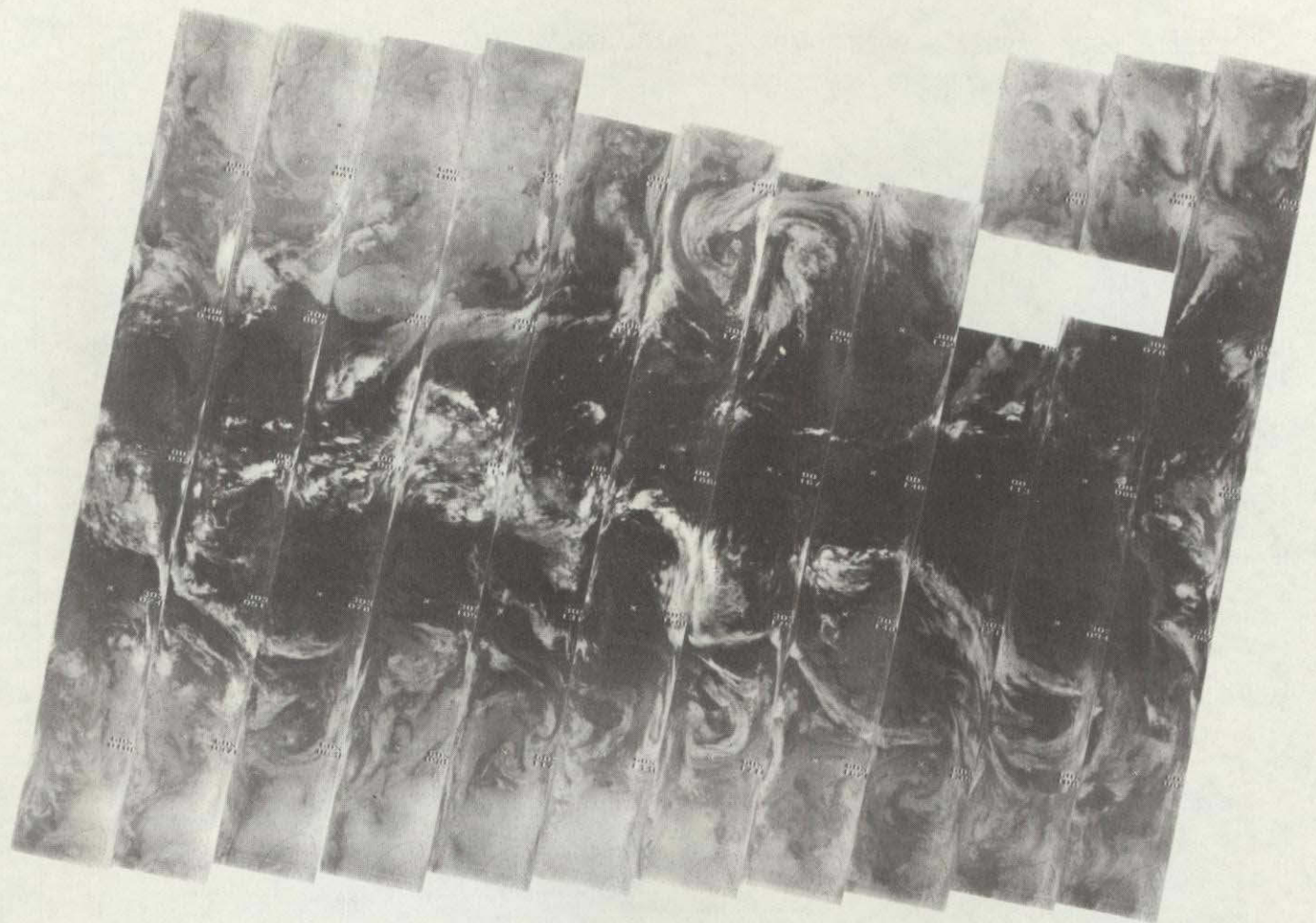


2275 2274 2273 2272 2271 2270 2269 2268 2267 2266 2265 2264 2263

28 NOVEMBER 1975

6.7 μm

4-62

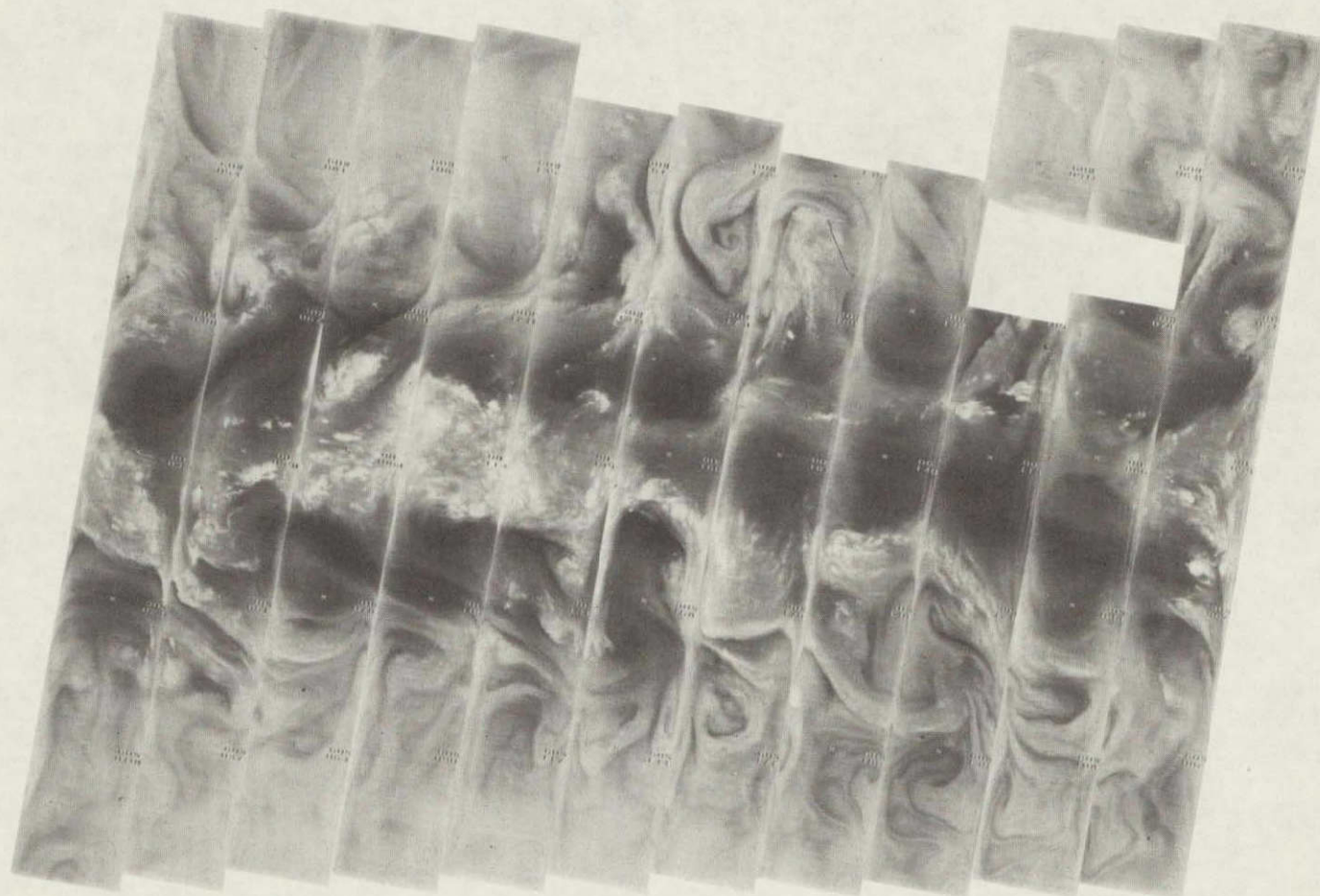


2288 2287 2286 2285 2284 2283 2282 2281 2280 2279 2278 2277 2276

29 NOVEMBER 1975

11.5 μ m

4-63

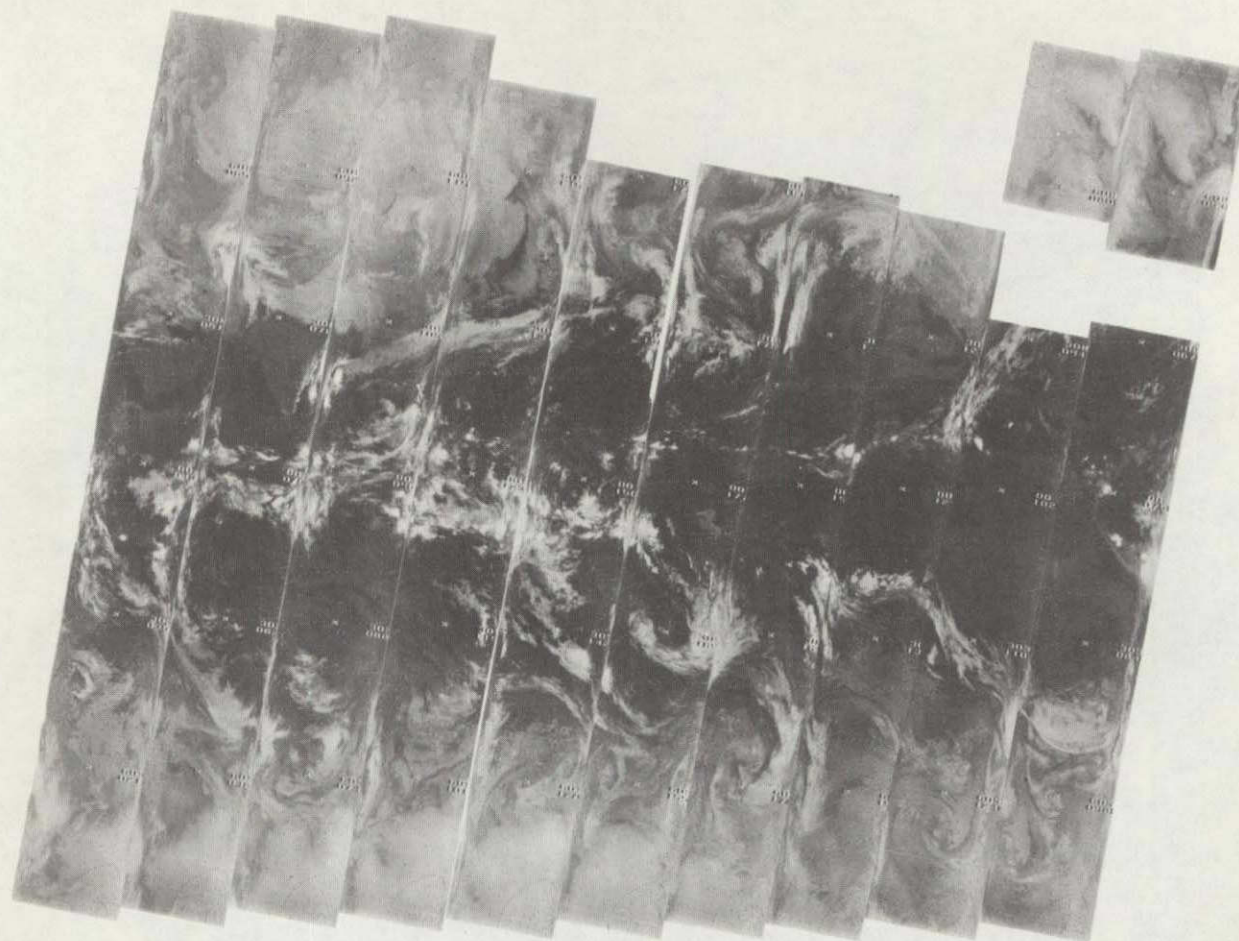


2288 2287 2286 2285 2284 2283 2282 2281 2280 2279 2278 2277 2276

29 NOVEMBER 1975

6.7 μm

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2302 2301 2300 2299 2298 2297 2296 2295 2294 2293 2292 2291 2290 2289

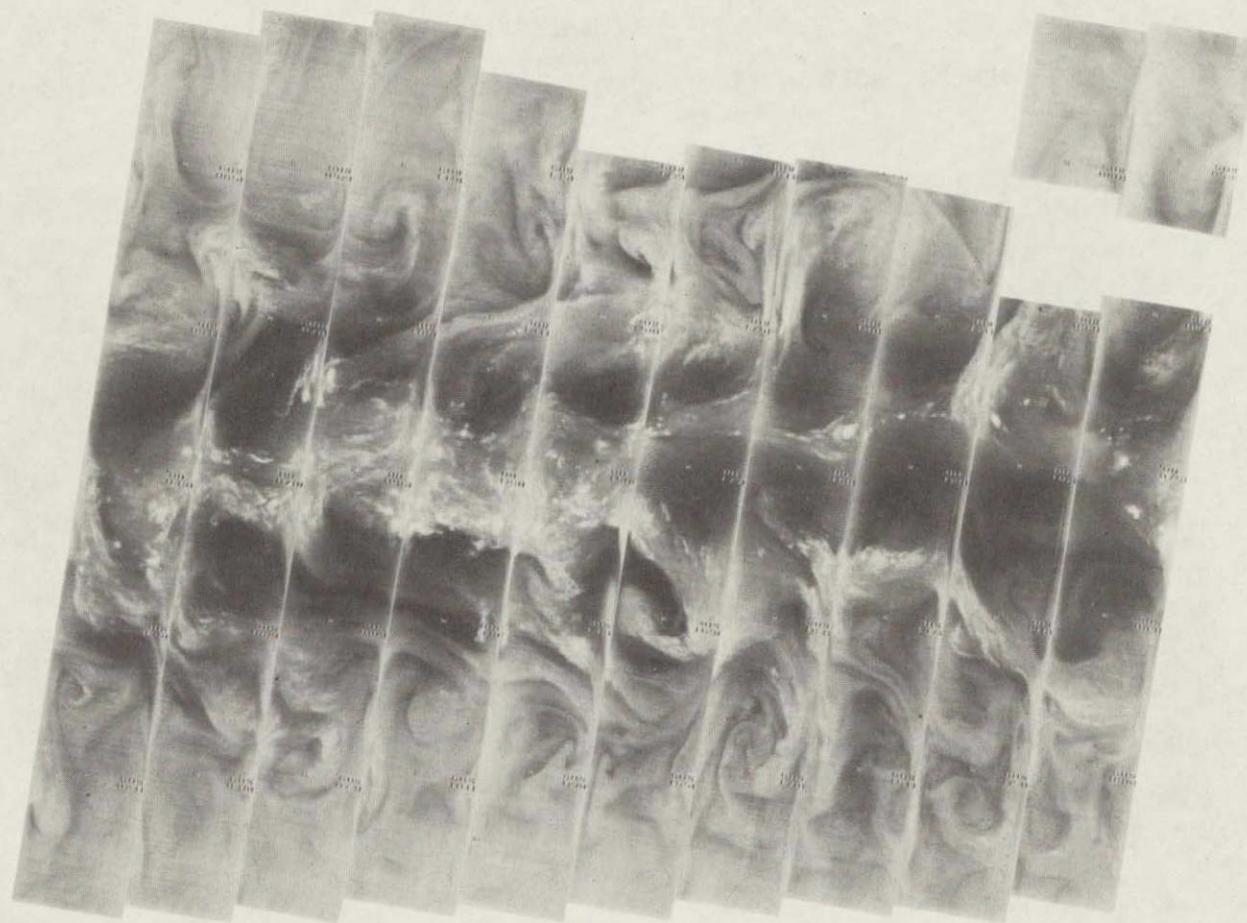
30 NOVEMBER 1975

11.5 μm

4-64

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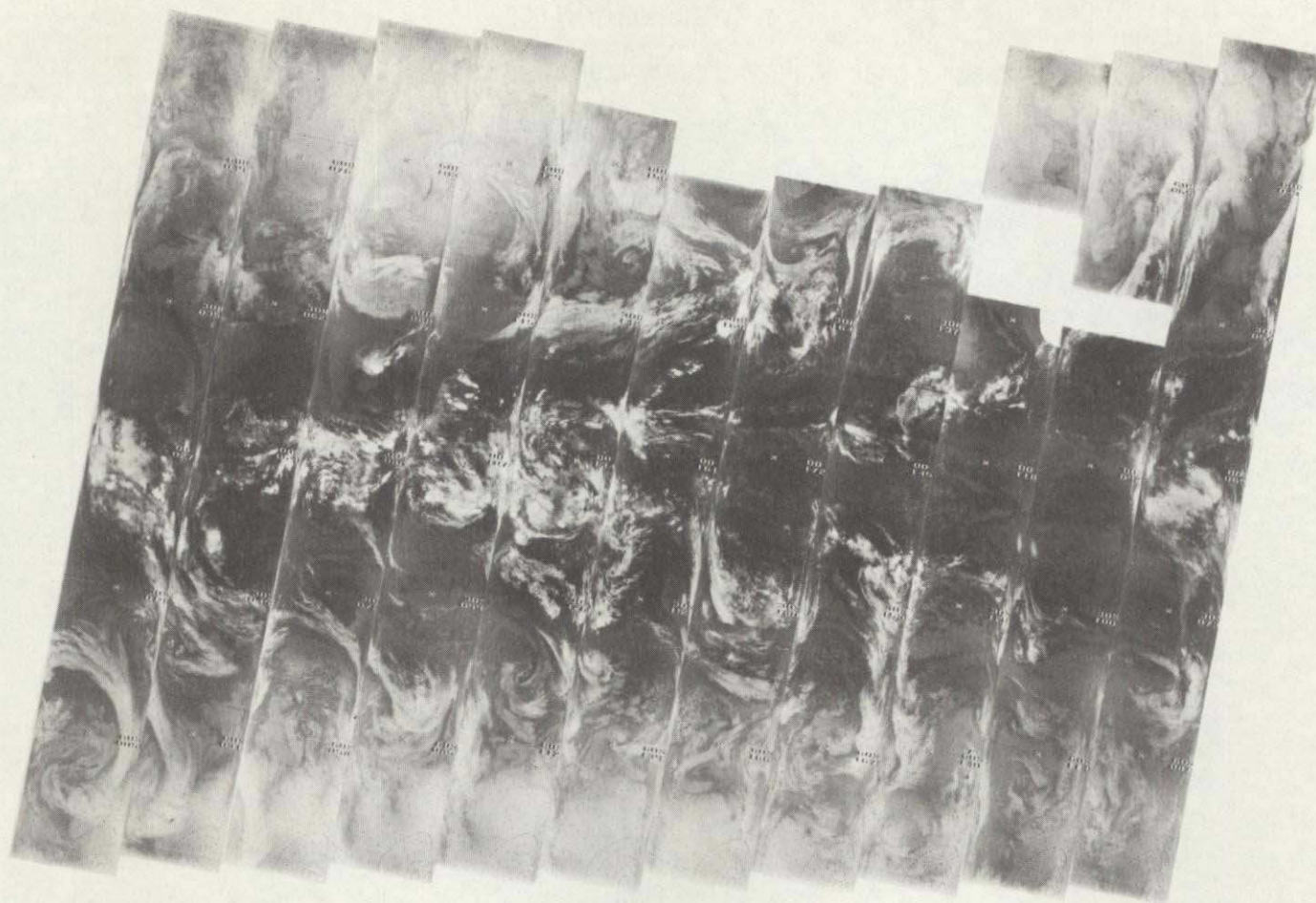
4-65



2302 2301 2300 2299 2298 2297 2296 2295 2294 2293 2292 2291 2290 2289

30 NOVEMBER 1975

6.7 μm



2315 2314 2313 2312 2311 2310 2309 2308 2307 2306 2305 2304 2303

1 DECEMBER 1975

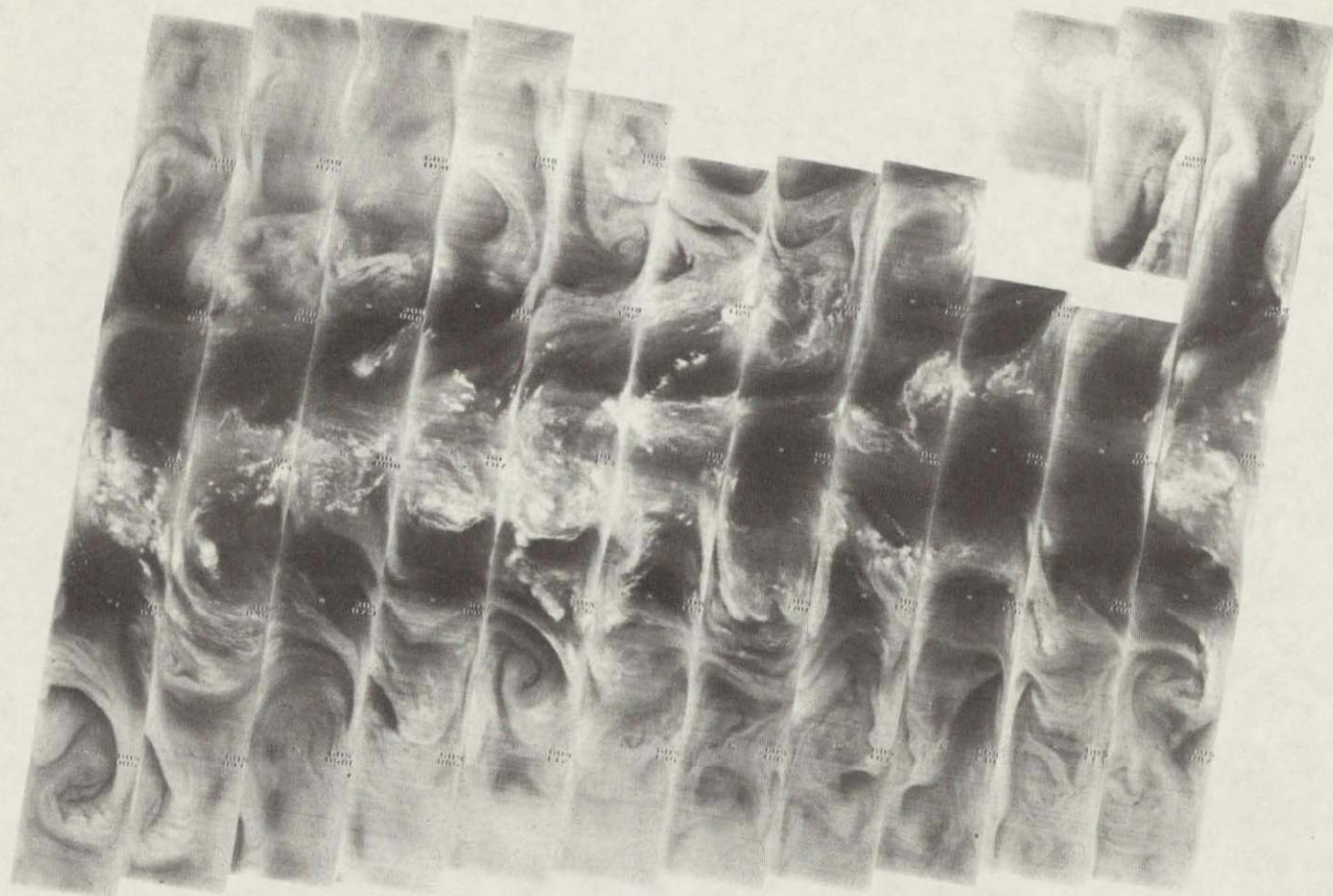
11.5 μm

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2315 2314 2313 2312 2311 2310 2309 2308 2307 2306 2305 2304 2303

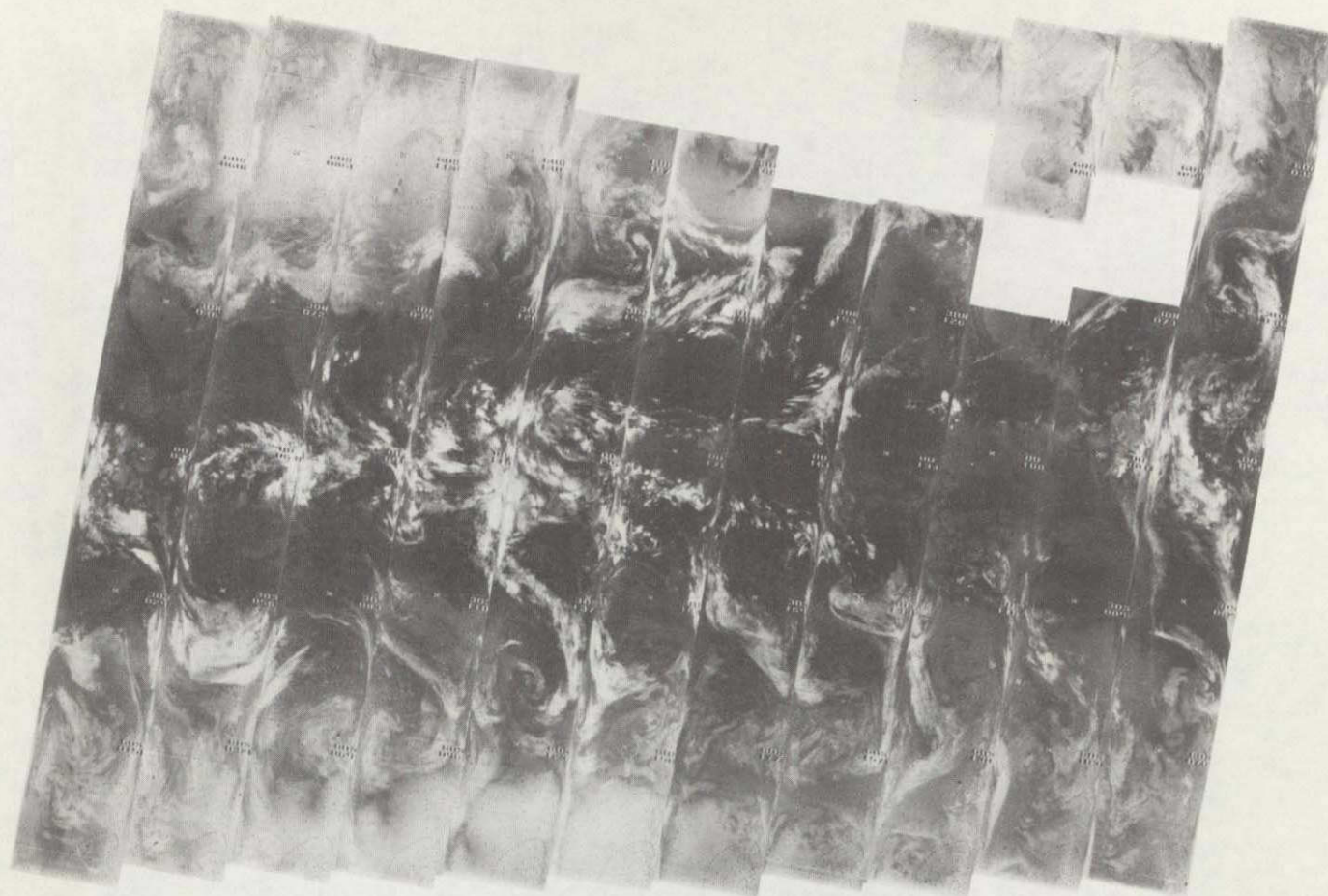
1 DECEMBER 1975

6.7 μm



4-67

4-68

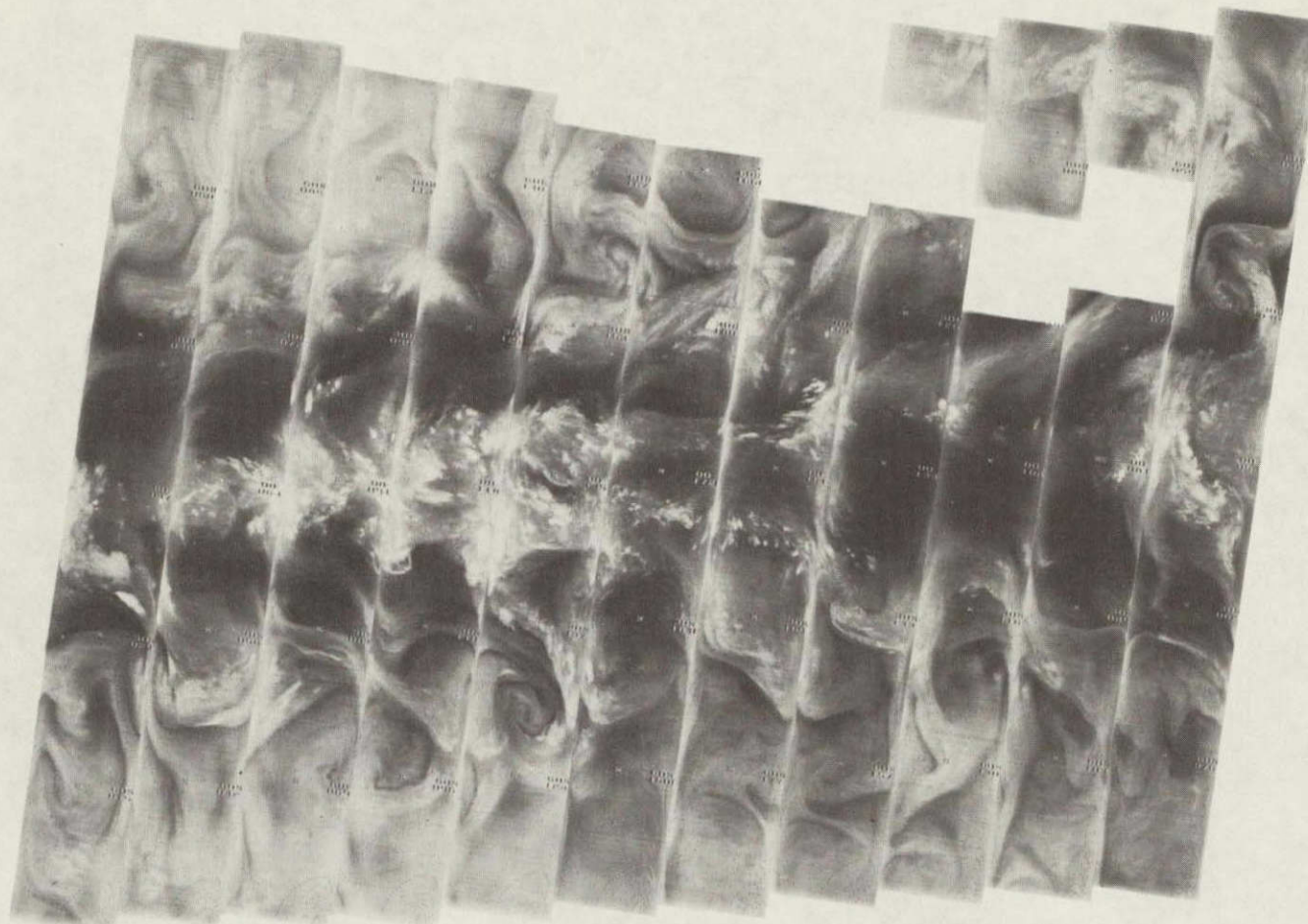


2329 2328 2327 2326 2325 2324 2323 2322 2321 2320 2319 2318 2317 2316

2 DECEMBER 1975

11.5 μm

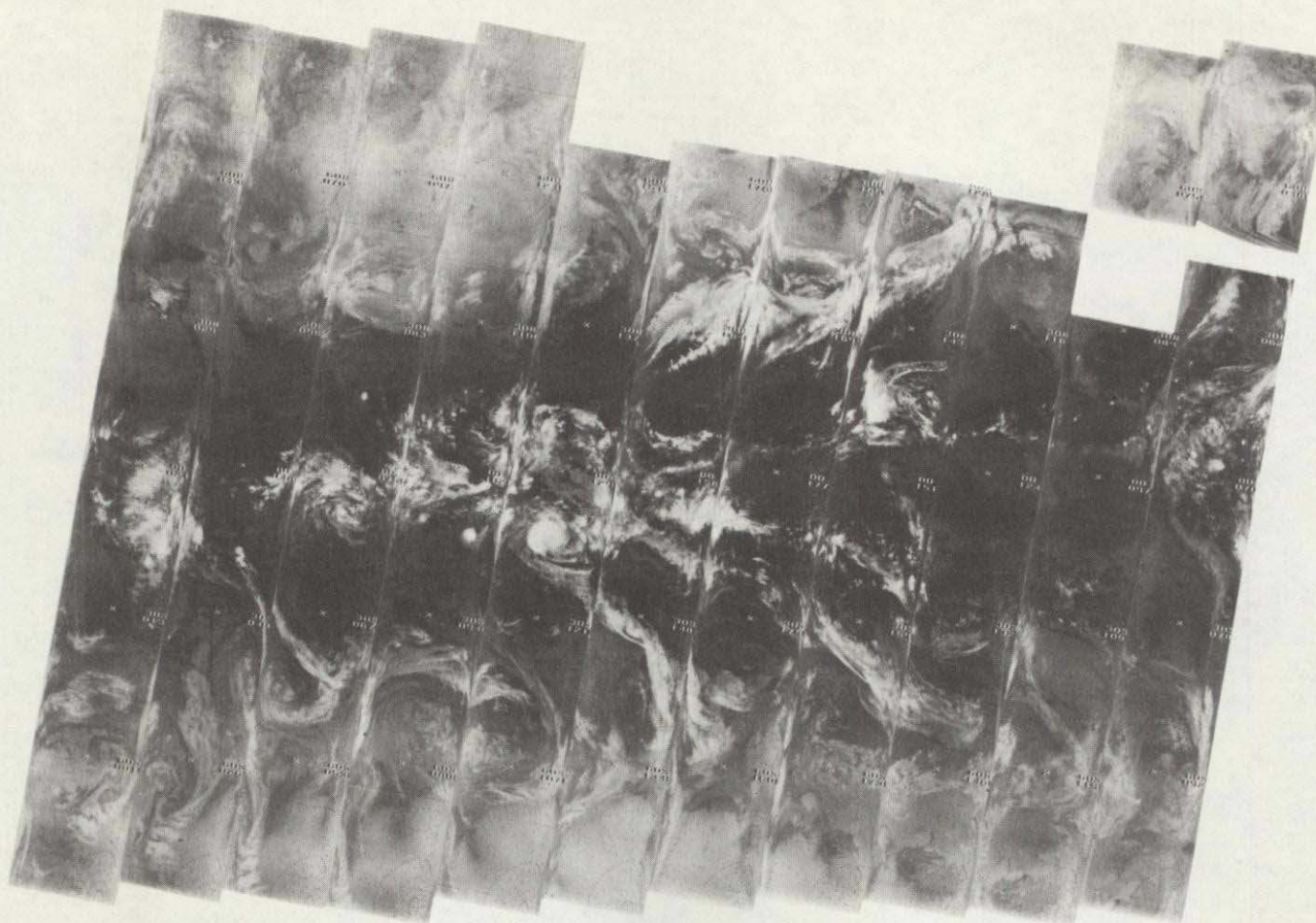
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2329 2328 2327 2326 2325 2324 2323 2322 2321 2320 2319 2318 2317 2316

2 DECEMBER 1975

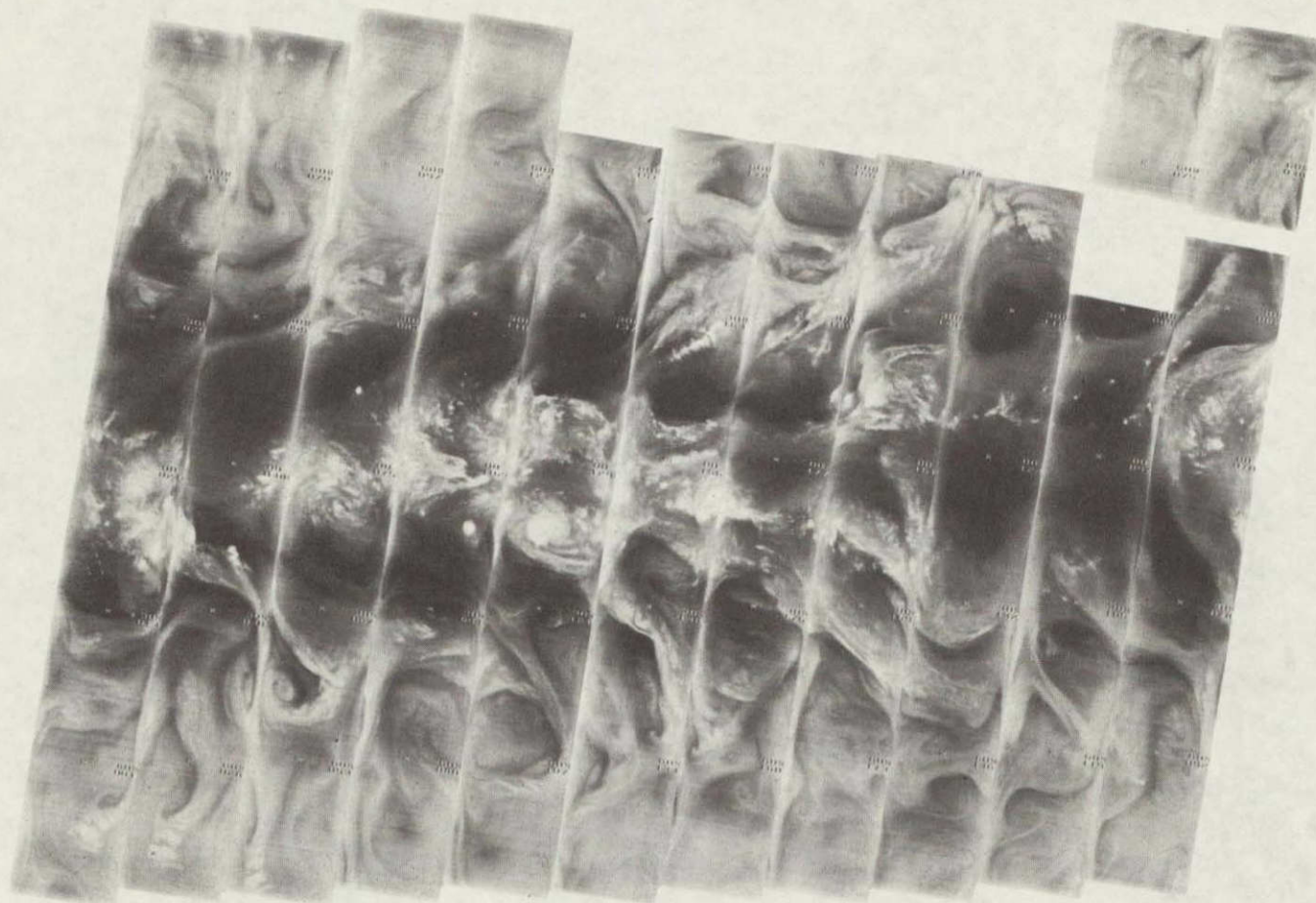
6.7 μm



2342 2341 2340 2339 2338 2337 2336 2335 2334 2333 2332 2331 2330

3 DECEMBER 1975

11.5 μm

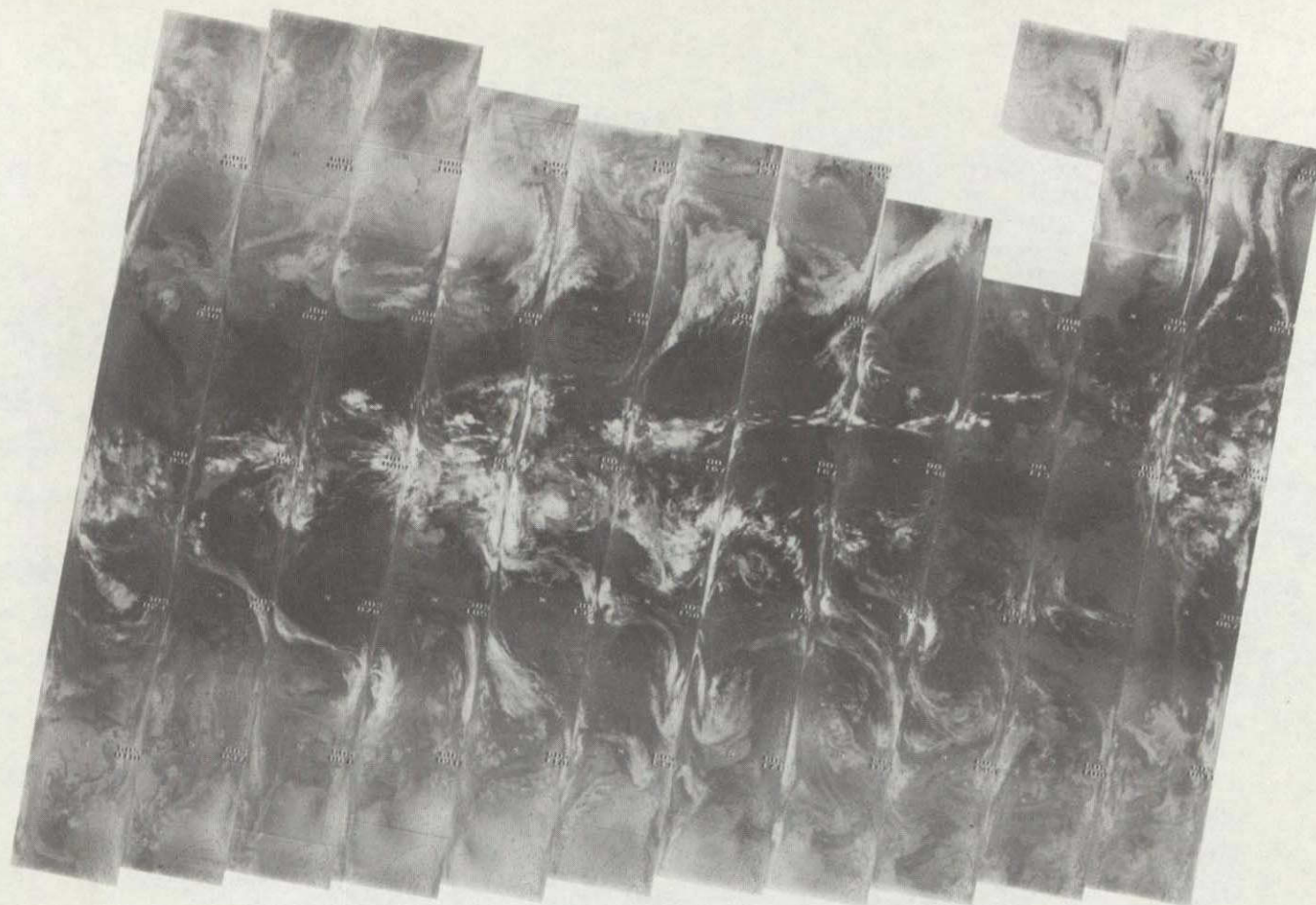


2342 2341 2340 2339 2338 2337 2336 2335 2334 2333 2332 2331 2330

3 DECEMBER 1975

6.7 μm

4-71



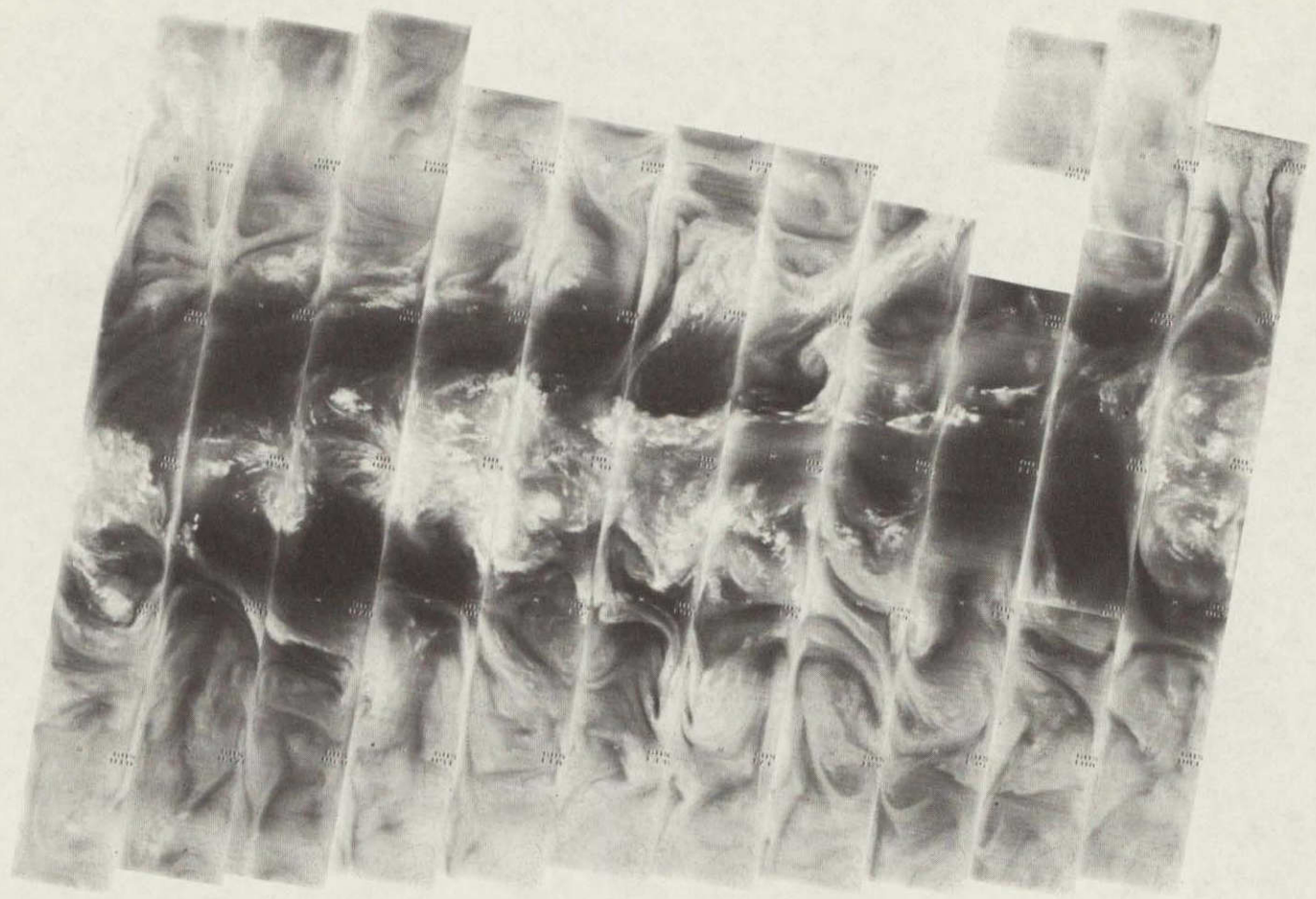
2355 2354 2353 2352 2351 2350 2349 2348 2347 2346 2345 2344 2343

4 DECEMBER 1975

11.5 μ m

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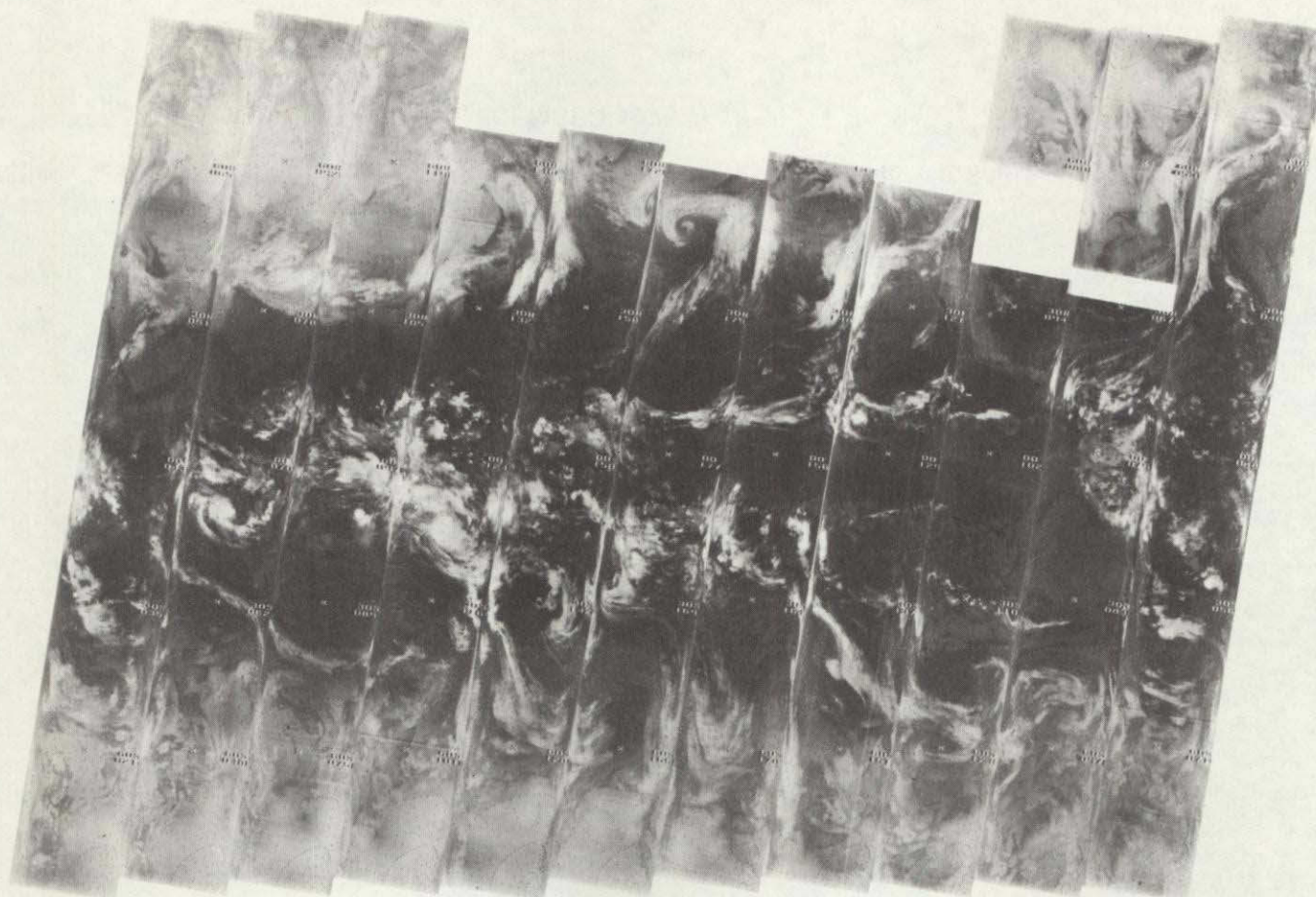


2355 2354 2353 2352 2351 2350 2349 2348 2347 2346 2345 2344 2343

4 DECEMBER 1975

6.7 μm

4-74

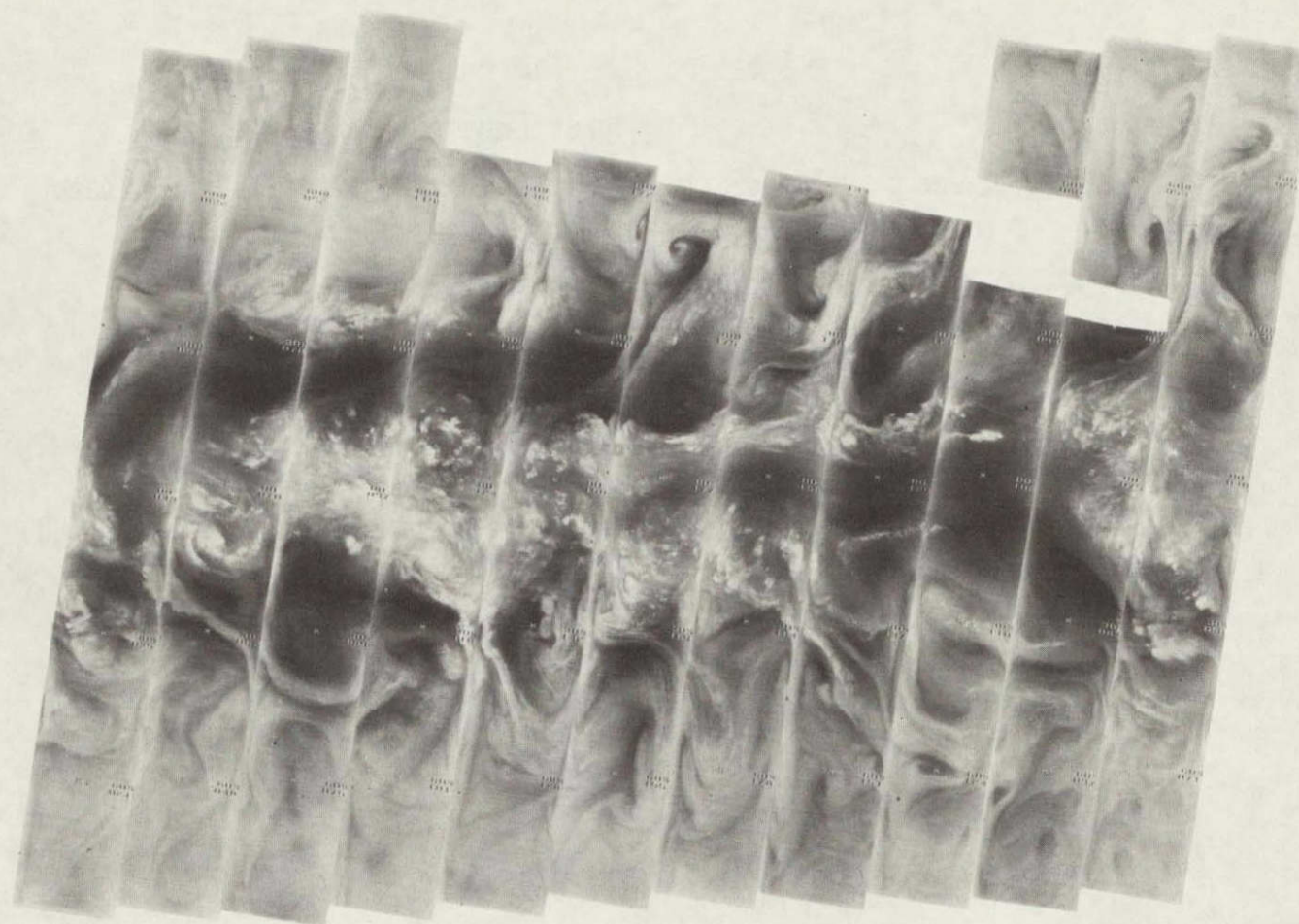


2369 2368 2367 2366 2365 2364 2363 2362 2361 2360 2359 2358 2357 2356

5 DECEMBER 1975

11.5 μm

4-75

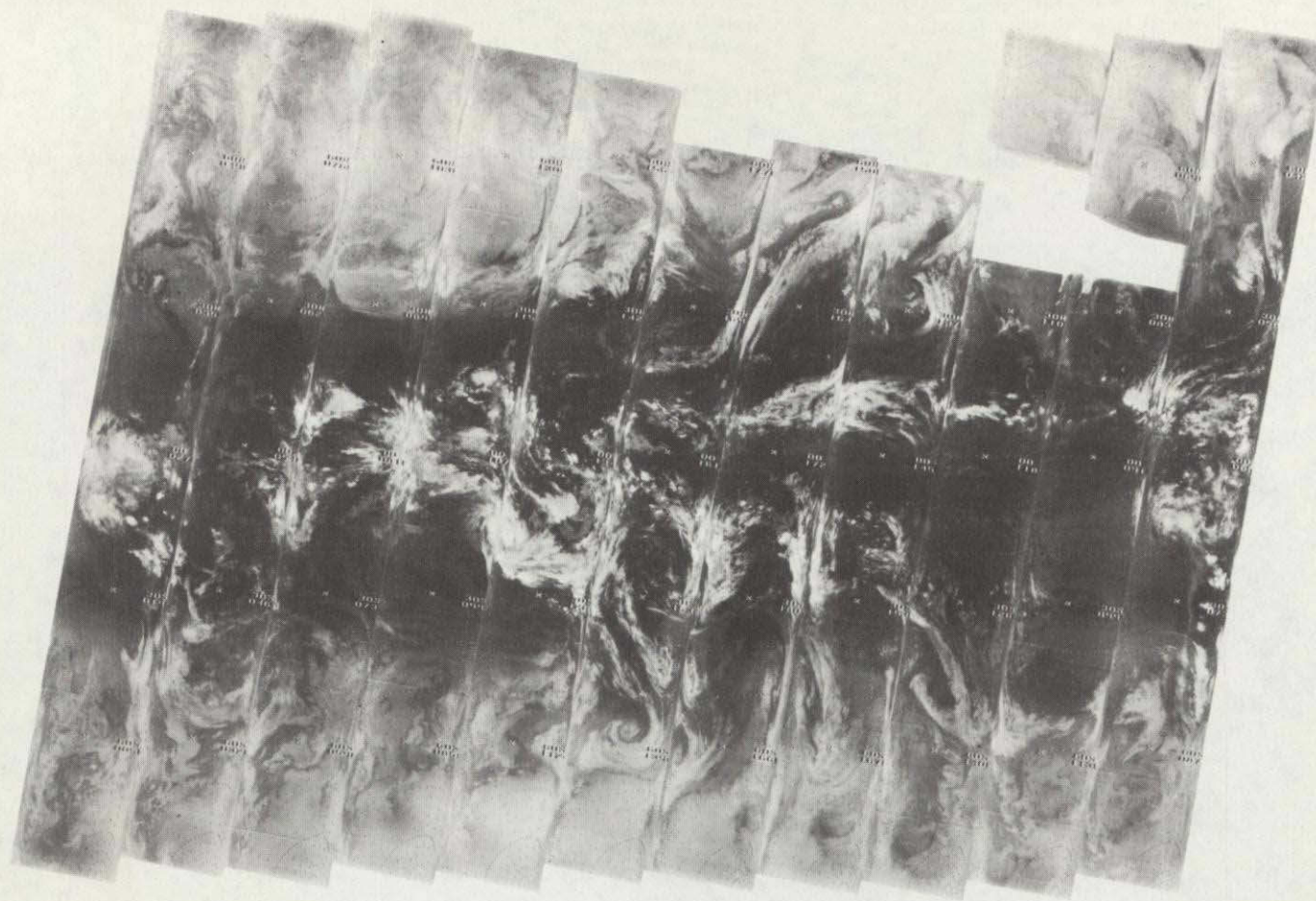


2369 2368 2367 2366 2365 2364 2363 2362 2361 2360 2359 2358 2357 2356

5 DECEMBER 1975

6.7 μ m

4-76

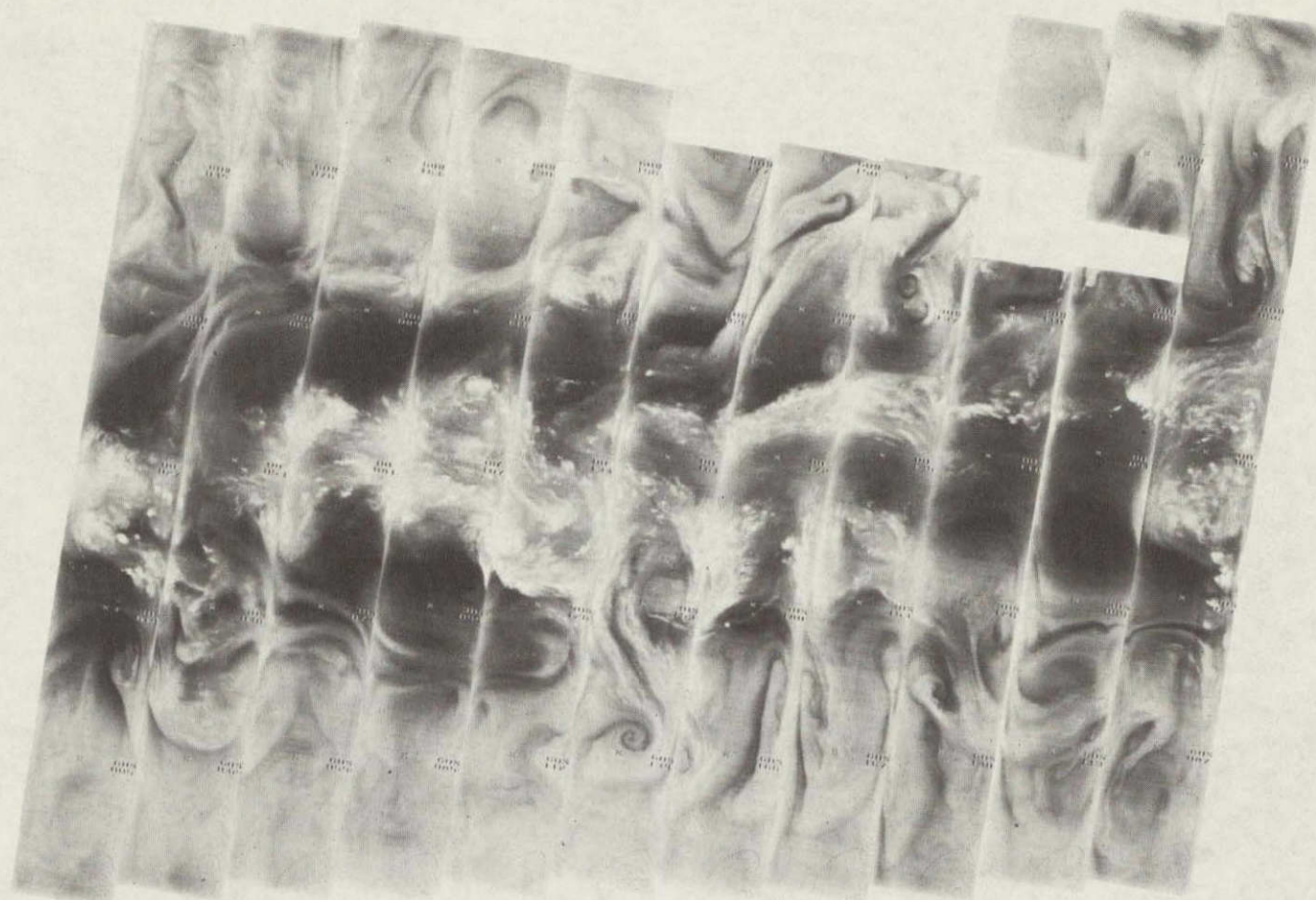


2382 2381 2380 2379 2378 2377 2376 2375 2374 2373 2372 2371 2370

6 DECEMBER 1975

11.5 μm

4-77



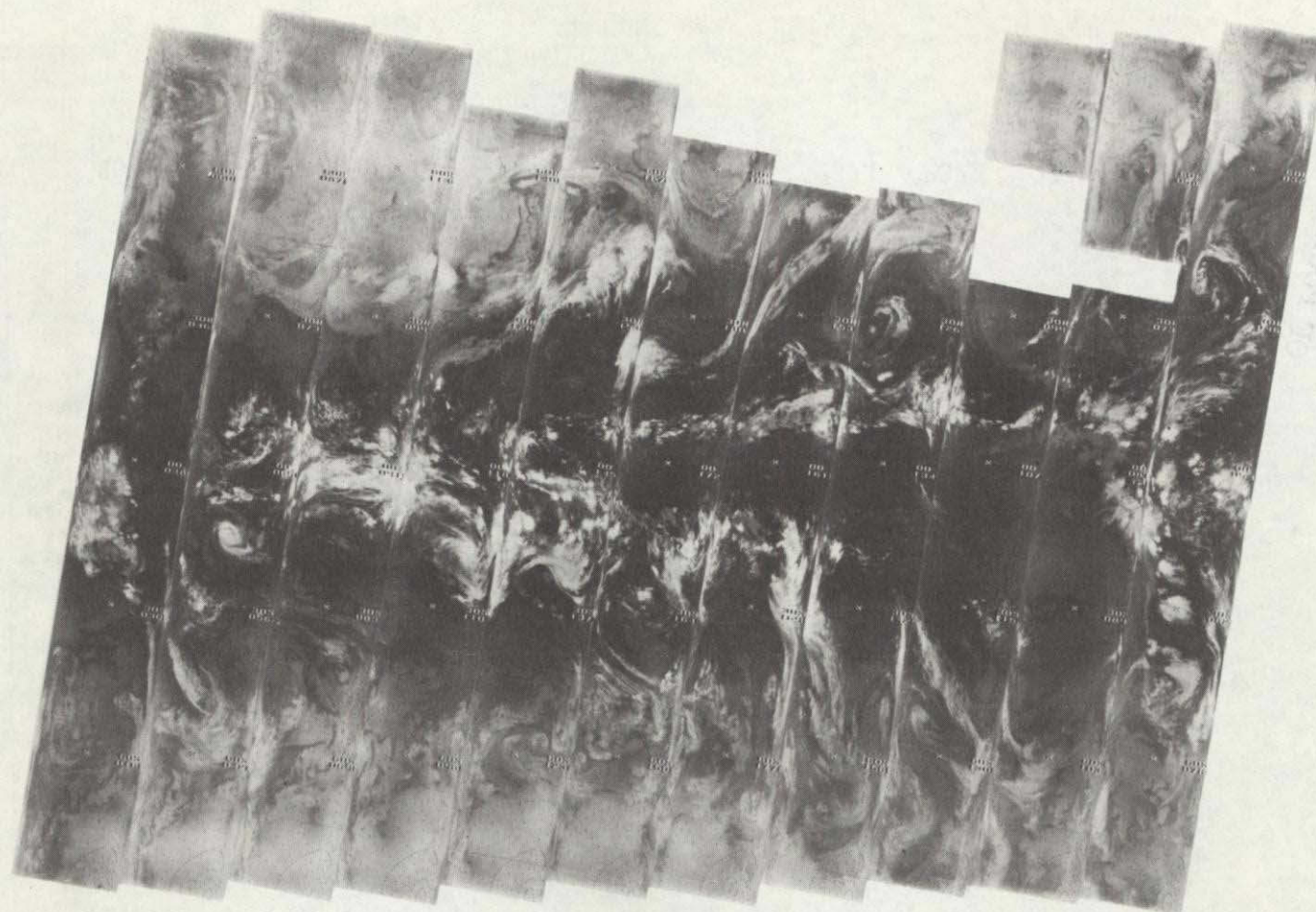
2382 2381 2380 2379 2378 2377 2376 2375 2374 2373 2372 2371 2370

6 DECEMBER 1975

6.7 μ m

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4-78

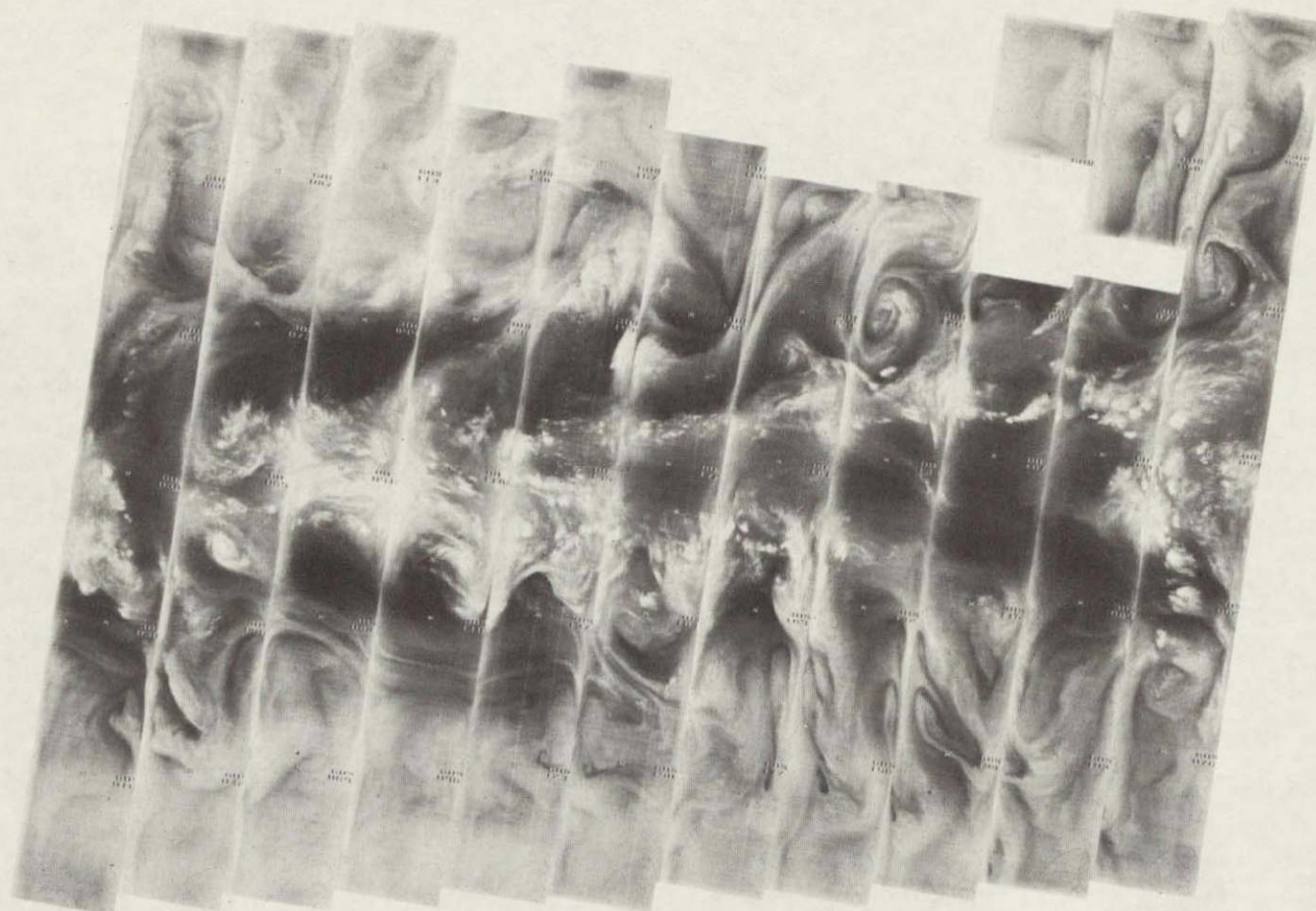


2396 2395 2394 2393 2392 2391 2390 2389 2388 2387 2386 2385 2384 2383

7 DECEMBER 1975

11.5 μm

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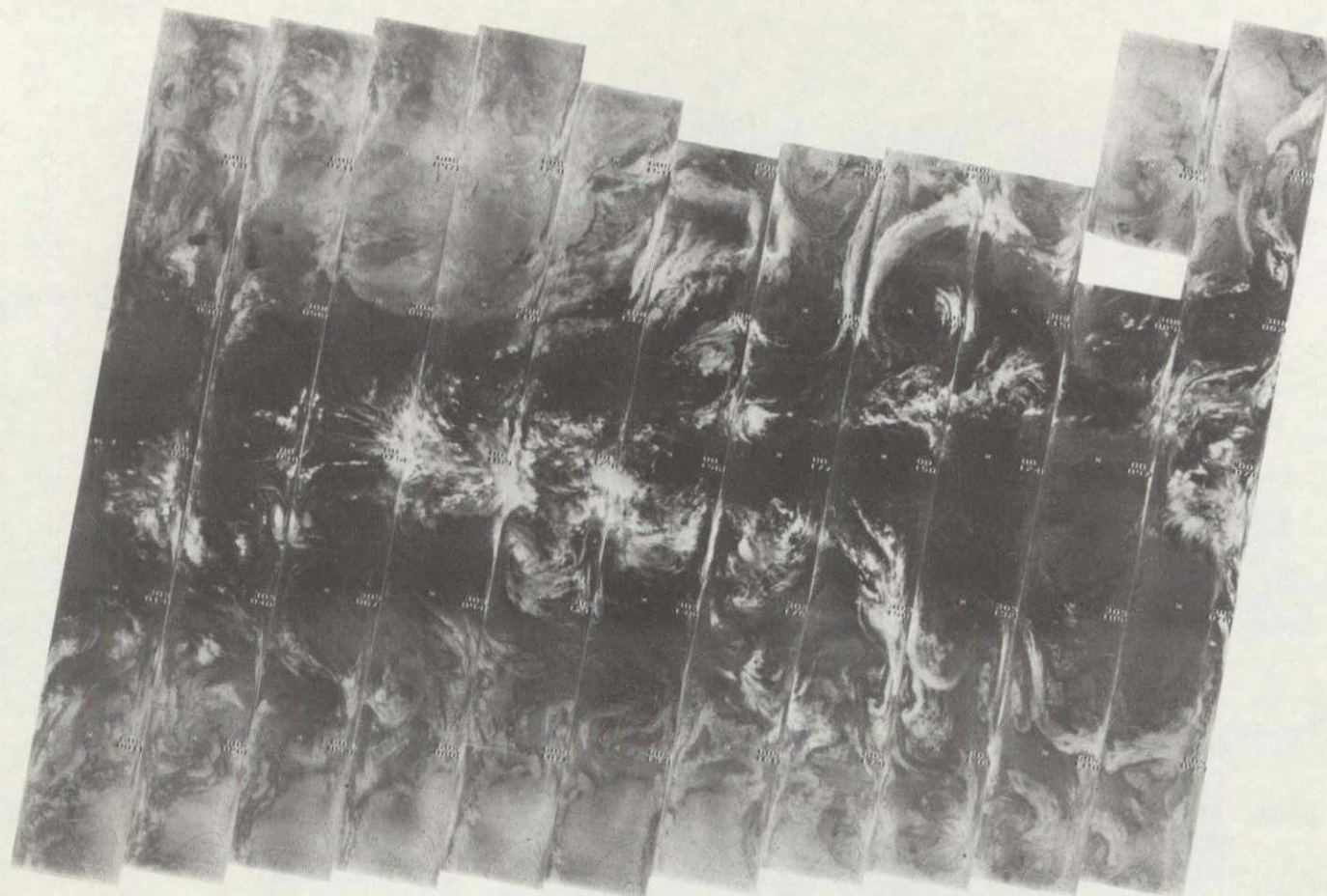
4-79

2396 2395 2394 2393 2392 2391 2390 2389 2388 2387 2386 2385 2384 2383

7 DECEMBER 1975

6.7 μm

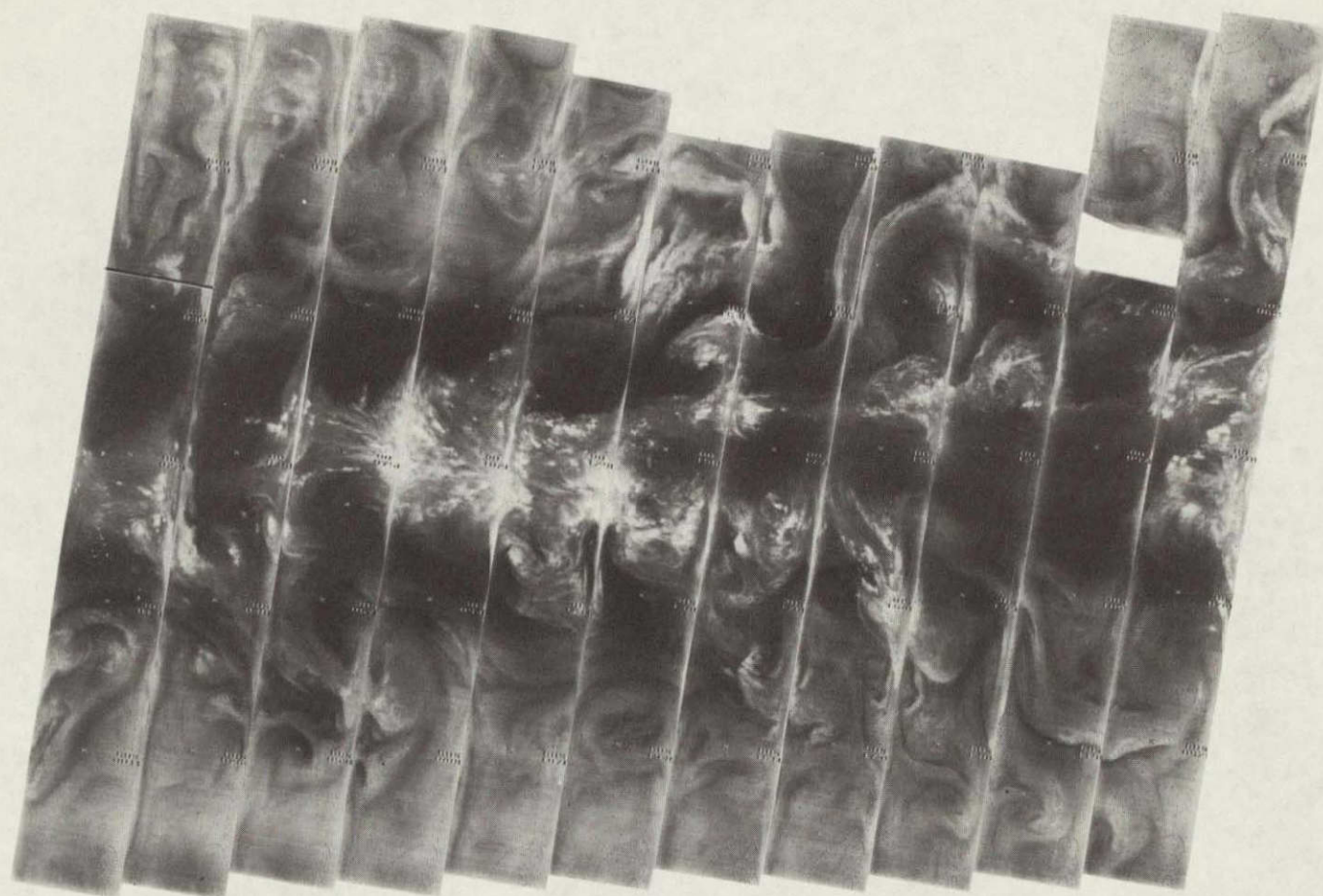
4-80



2409 2408 2407 2406 2405 2404 2403 2402 2401 2400 2399 2398 2397

8 DECEMBER 1975

11.5 μm



2409 2408 2407 2406 2405 2404 2403 2402 2401 2400 2399 2398 2397

8 DECEMBER 1975

6.7 μm

4-82



2422 2421 2420 2419 2418 2417 2416 2415 2414 2413 2412 2411 2410

9 DECEMBER 1975

11.5 μm

4-83

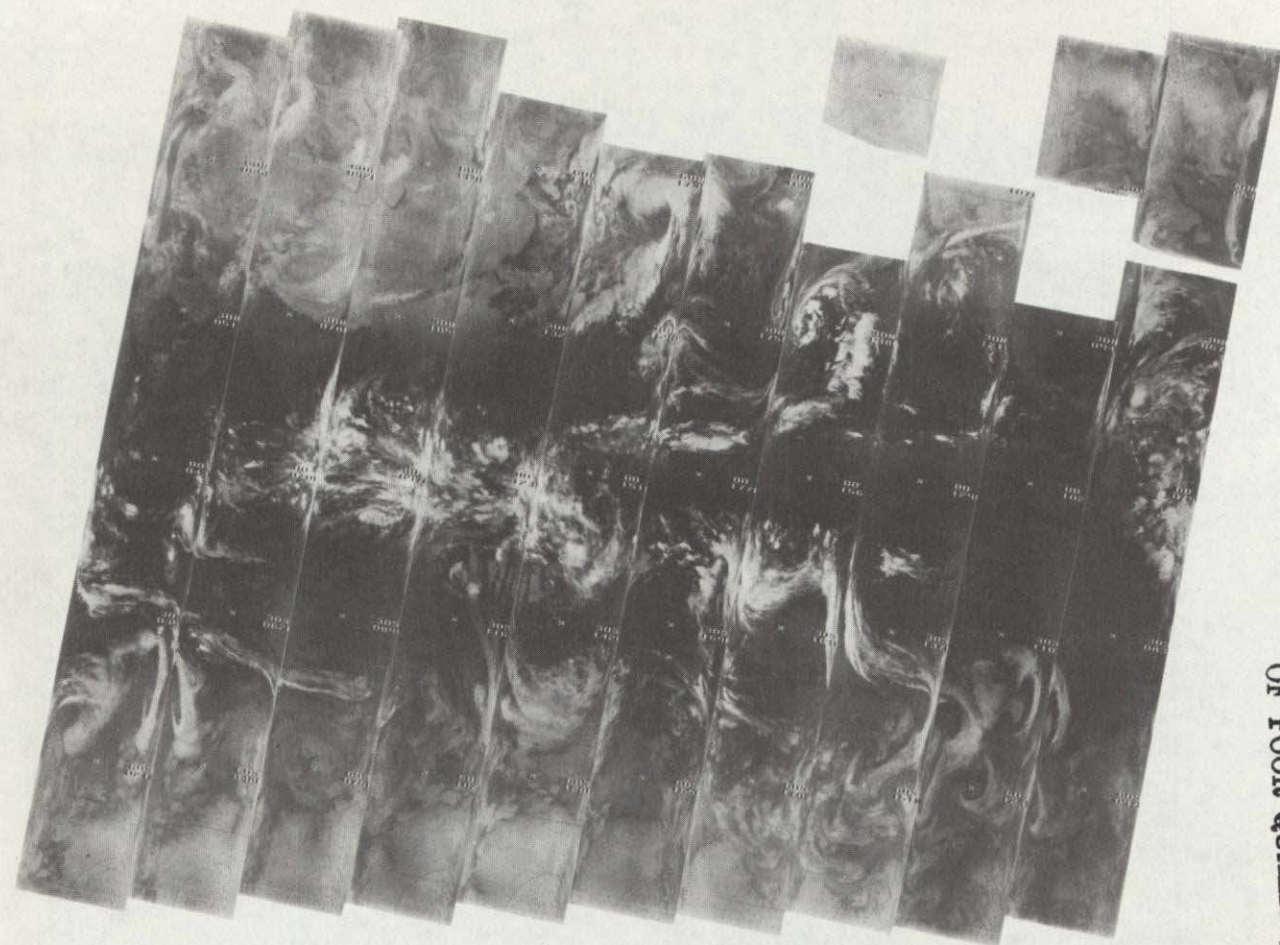


2422 2421 2420 2419 2418 2417 2416 2415 2414 2413 2412 2411 2410

9 DECEMBER 1975

6.7 μm

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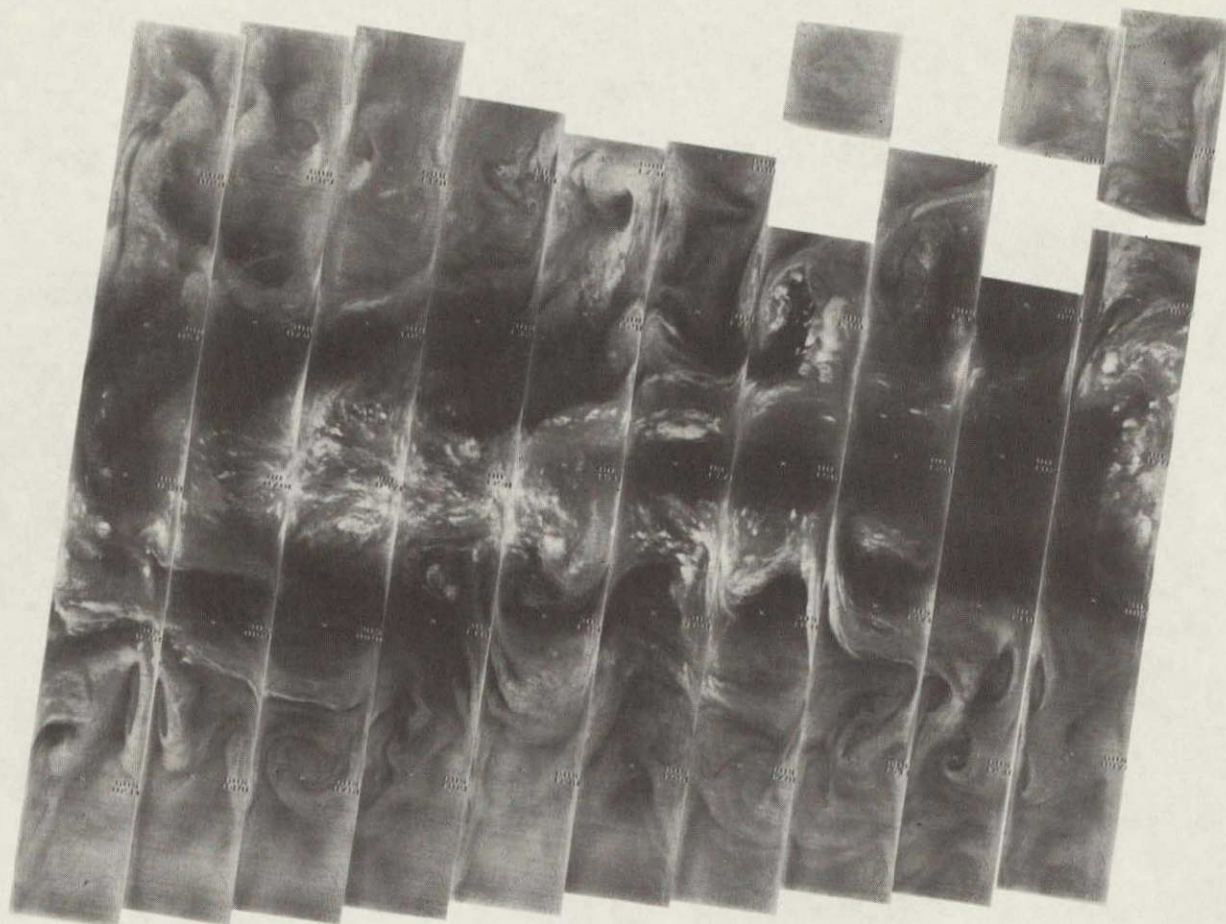


2436 2435 2434 2433 2432 2431 2430 2429 2428 2427 2426 2425 2424 2423

10 DECEMBER 1975

11.5 μ m

+



2436 2435 2434 2433 2432 2431 2430 2429 2428 2427 2426 2425 2424 2423

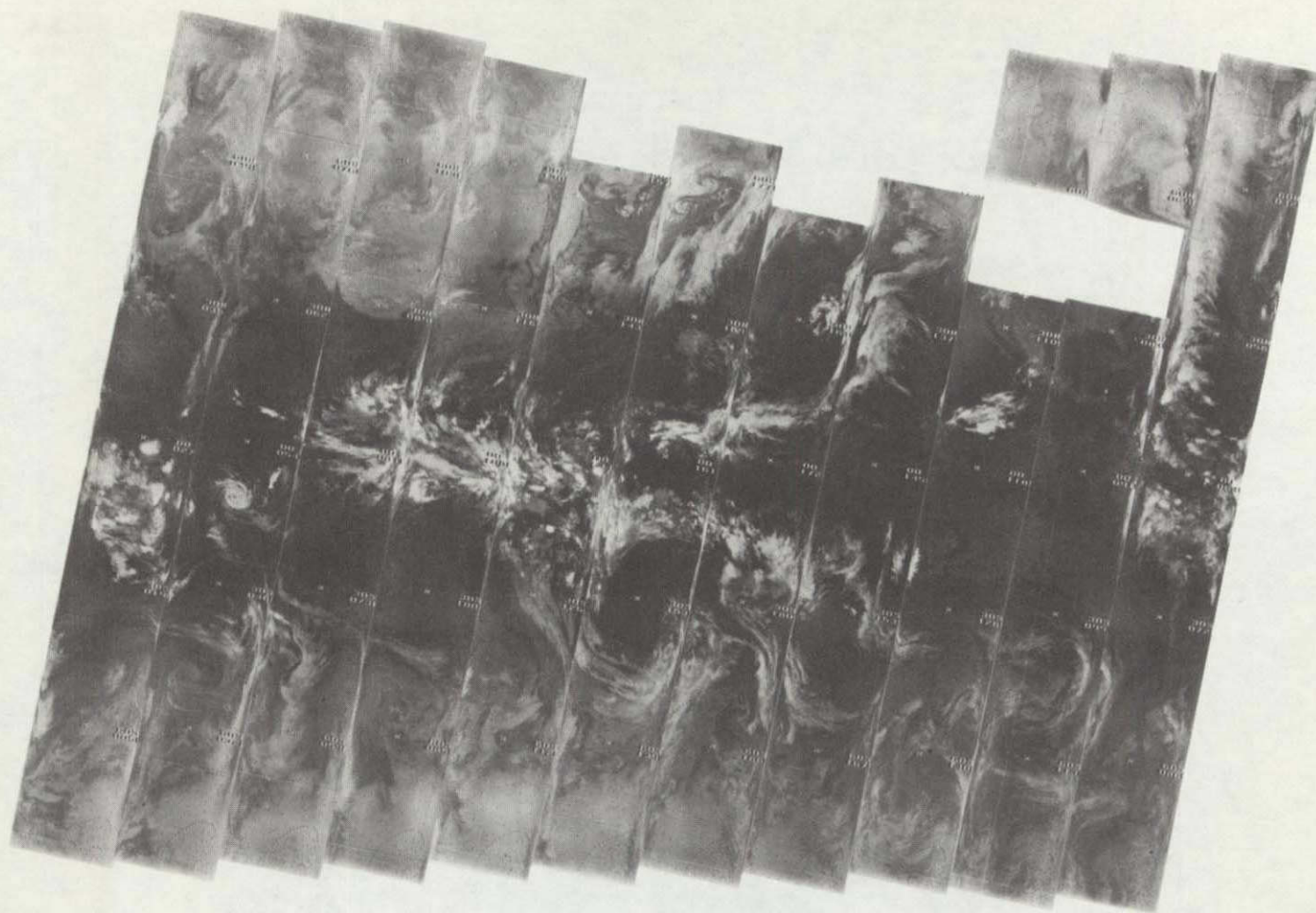
10 DECEMBER 1975

6.7 μm

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OF POOR QUALITY

+

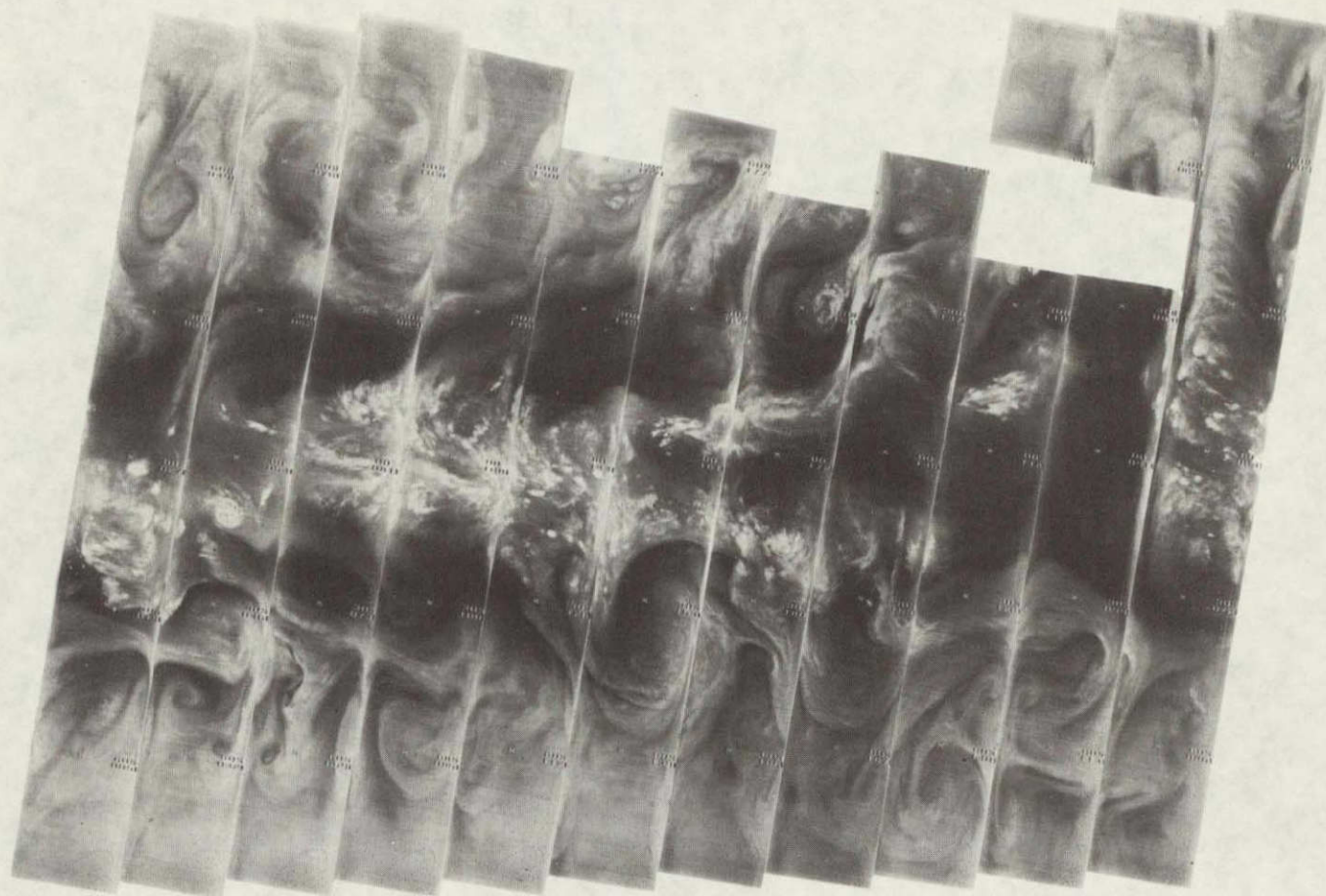
4-86



2449 2448 2447 2446 2445 2444 2443 2442 2441 2440 2439 2438 2437

11 DECEMBER 1975

11.5 μm

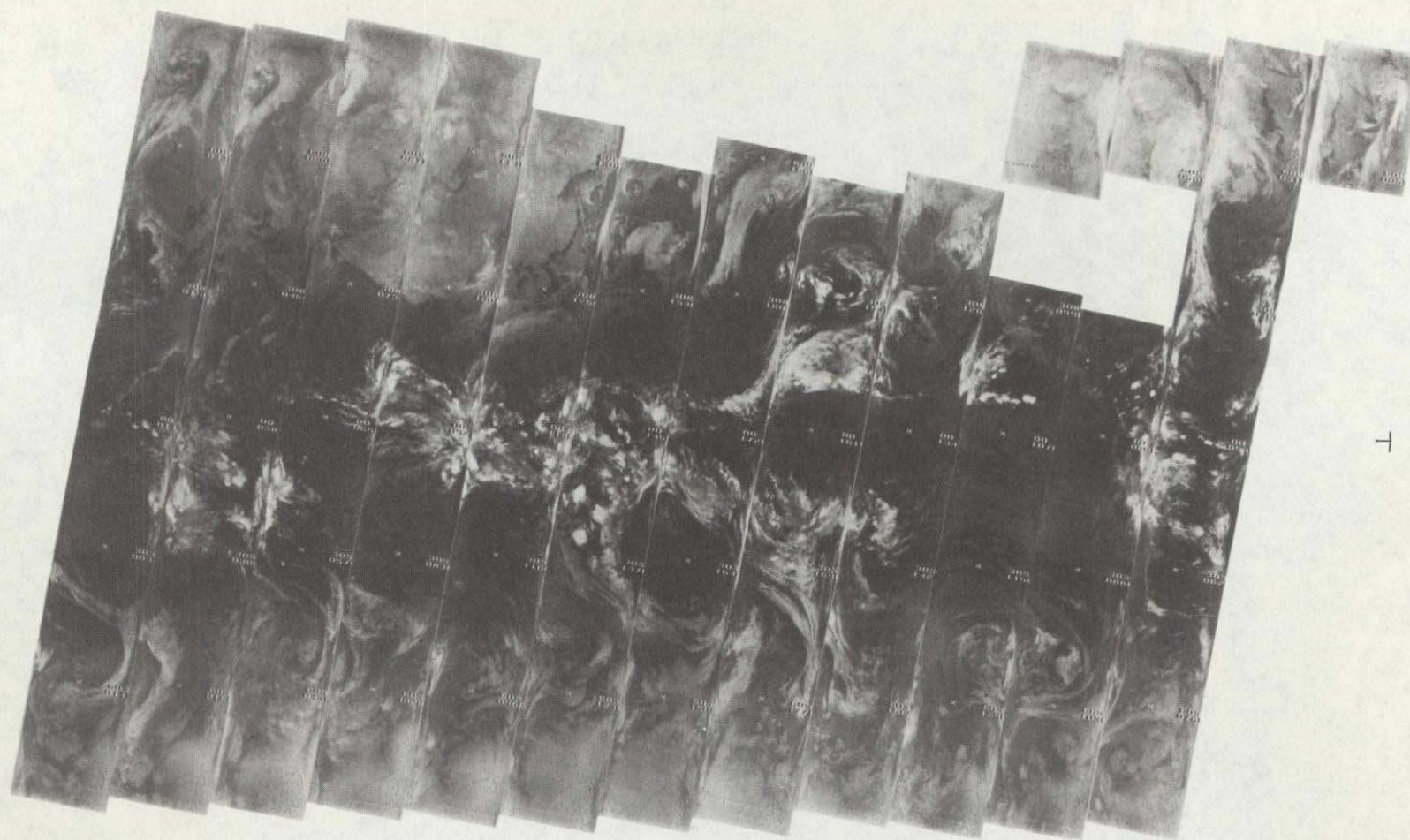


2449 2448 2447 2446 2445 2444 2443 2442 2441 2440 2439 2438 2437

11 DECEMBER 1975

6.7 μm

4-88

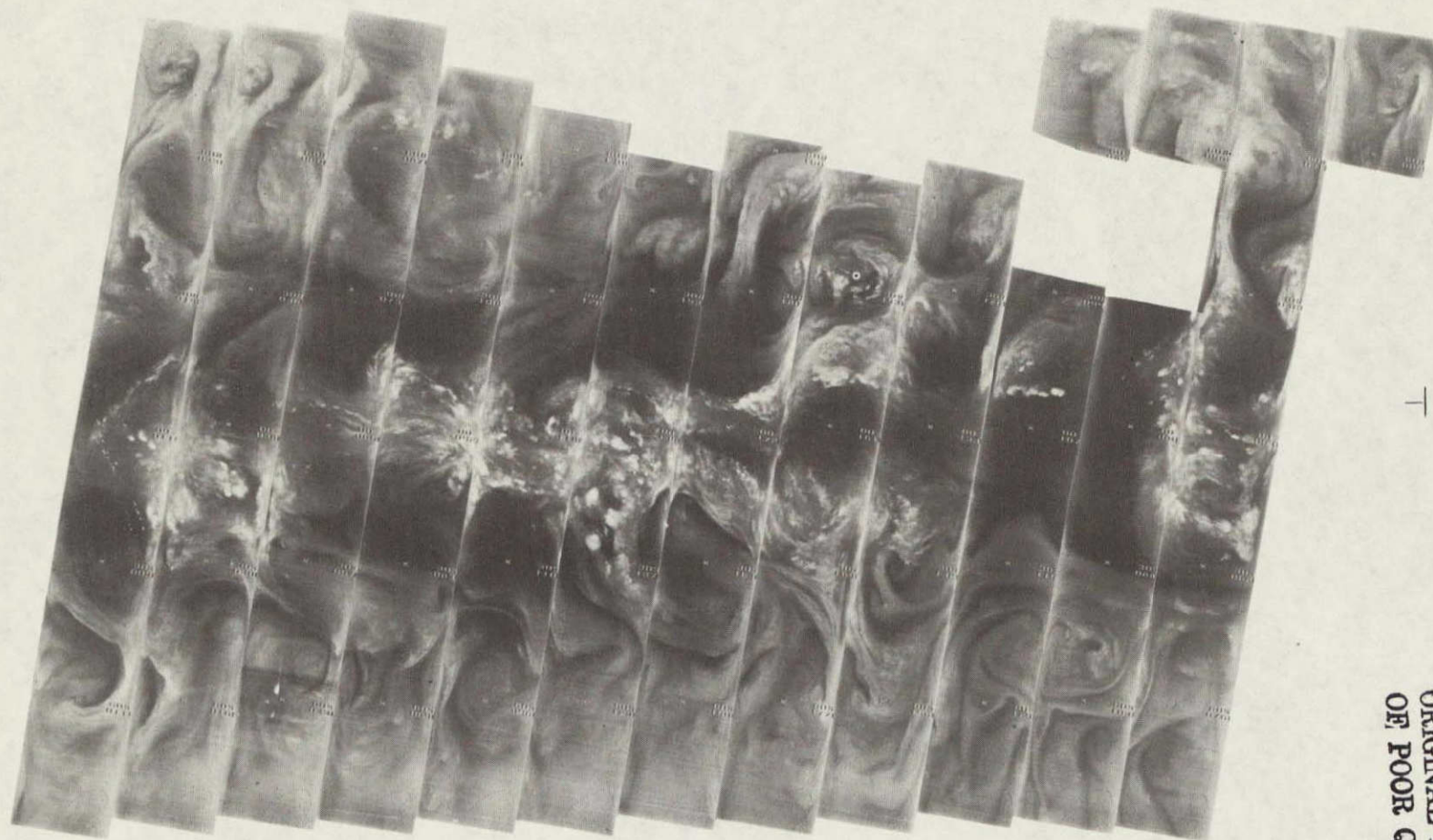


2463 2462 2461 2460 2459 2458 2457 2456 2455 2454 2453 2452 2451 2450

12 DECEMBER 1975

11.5 μm

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OF POOR QUALITY

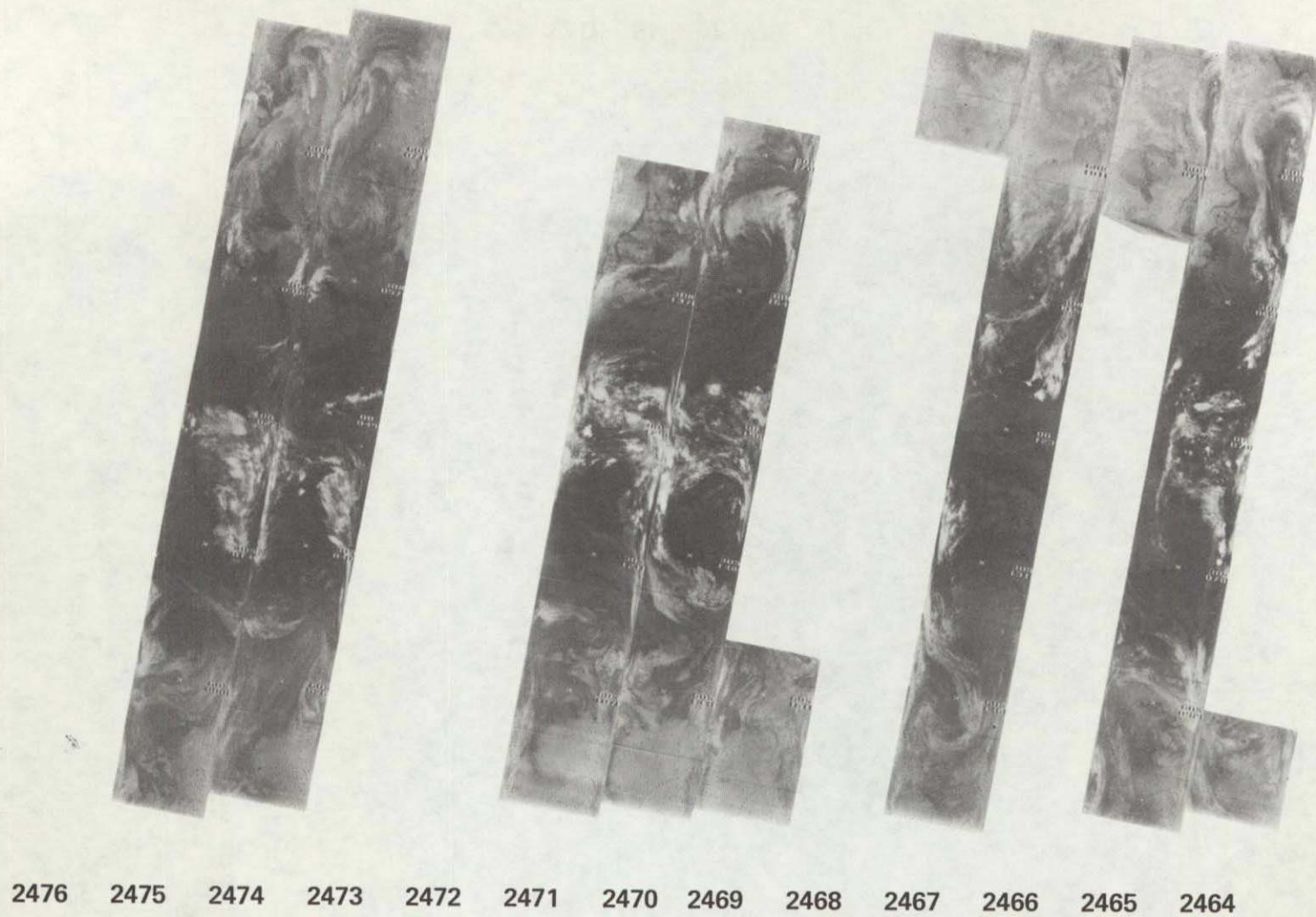


2463 2462 2461 2460 2459 2458 2457 2456 2455 2454 2453 2452 2451 2450

12 DECEMBER 1975

6.7 μ m

4-90



2476 2475 2474 2473 2472 2471 2470 2469 2468 2467 2466 2465 2464

13 DECEMBER 1975

11.5 μm

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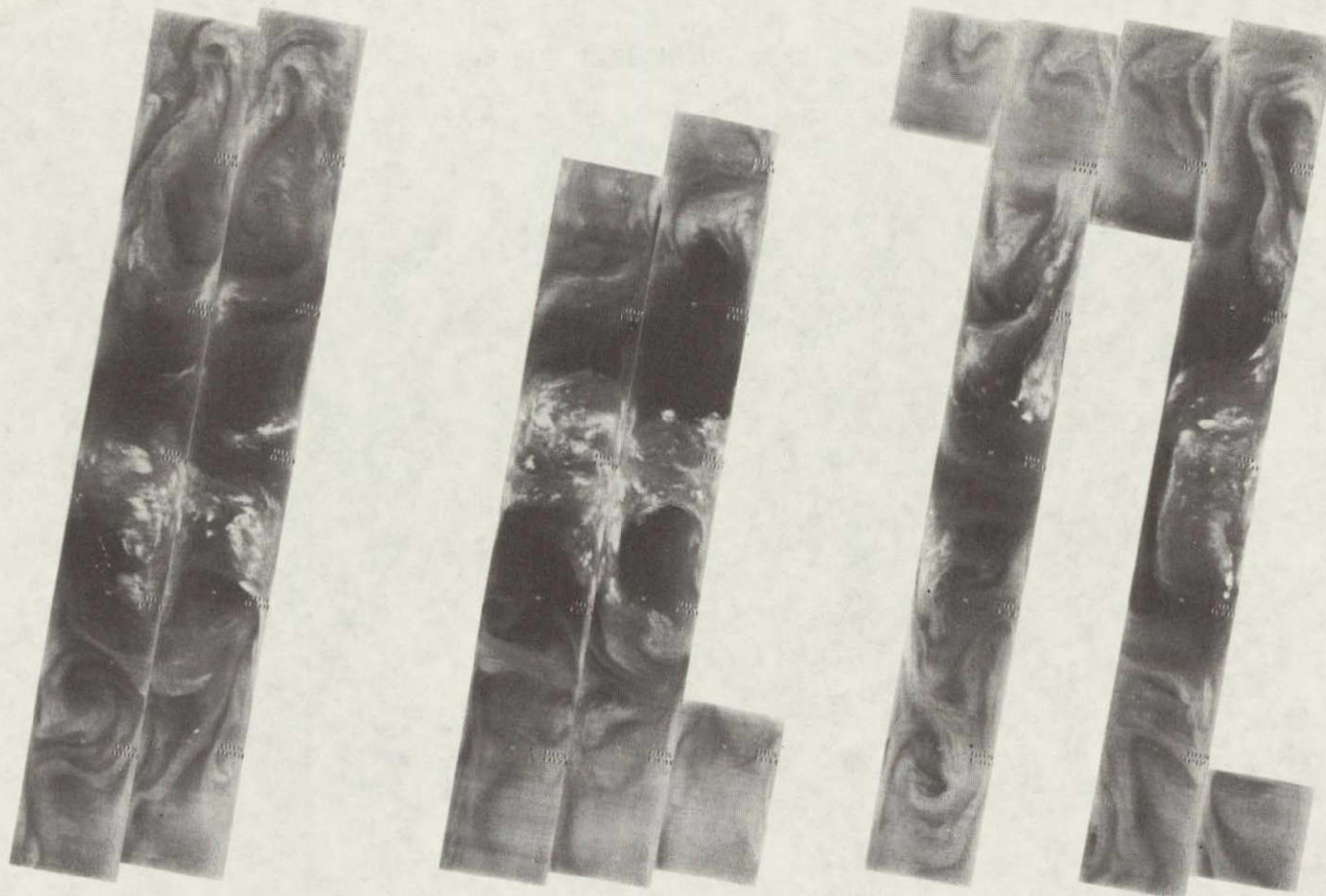
4-91

+

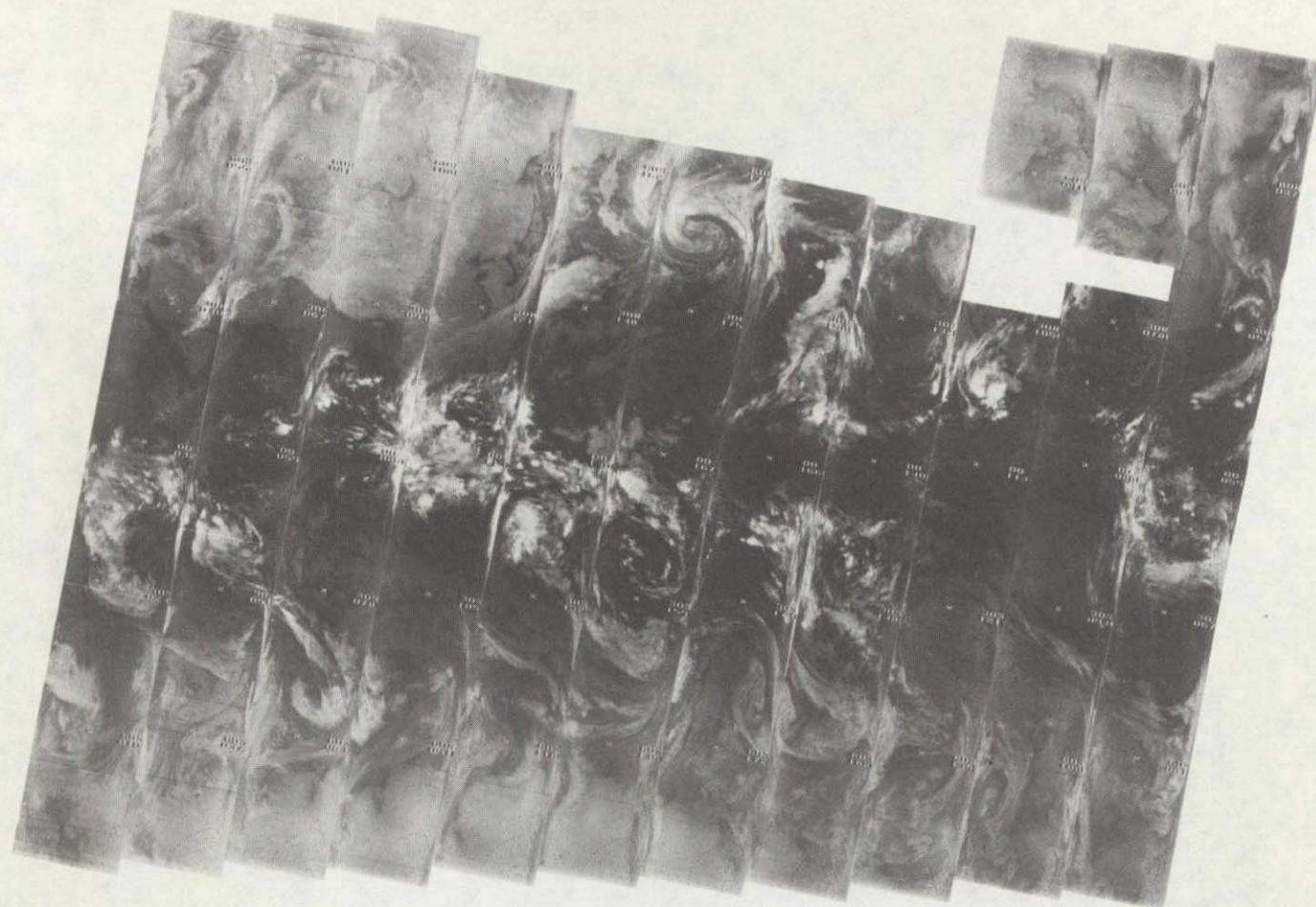
2476 2475 2474 2473 2472 2471 2470 2469 2468 2467 2466 2465 2464

13 DECEMBER 1975

6.7 μm



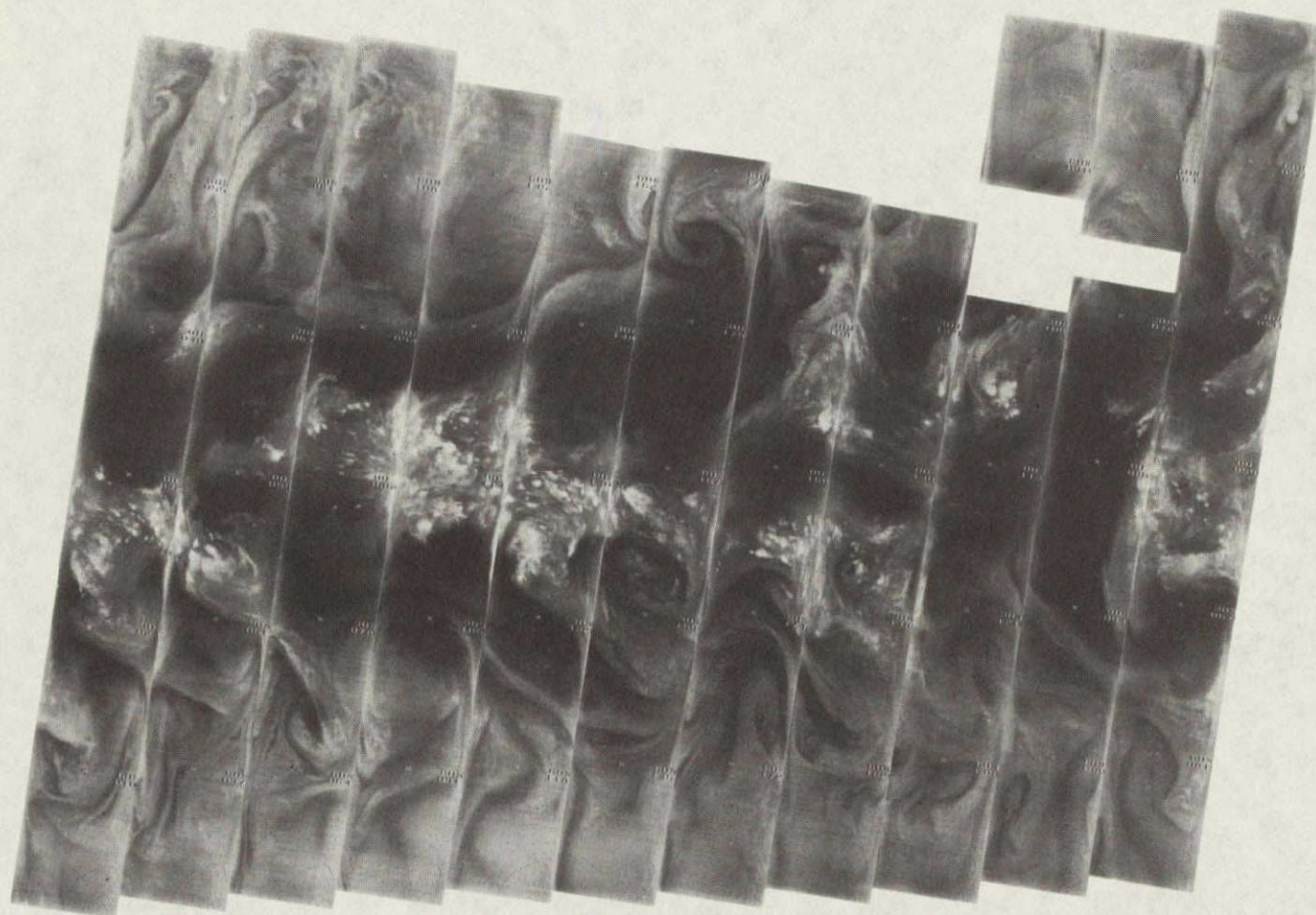
4-92



2489 2488 2487 2486 2485 2484 2483 2482 2481 2480 2479 2478 2477

14 DECEMBER 1975

11.5 μm



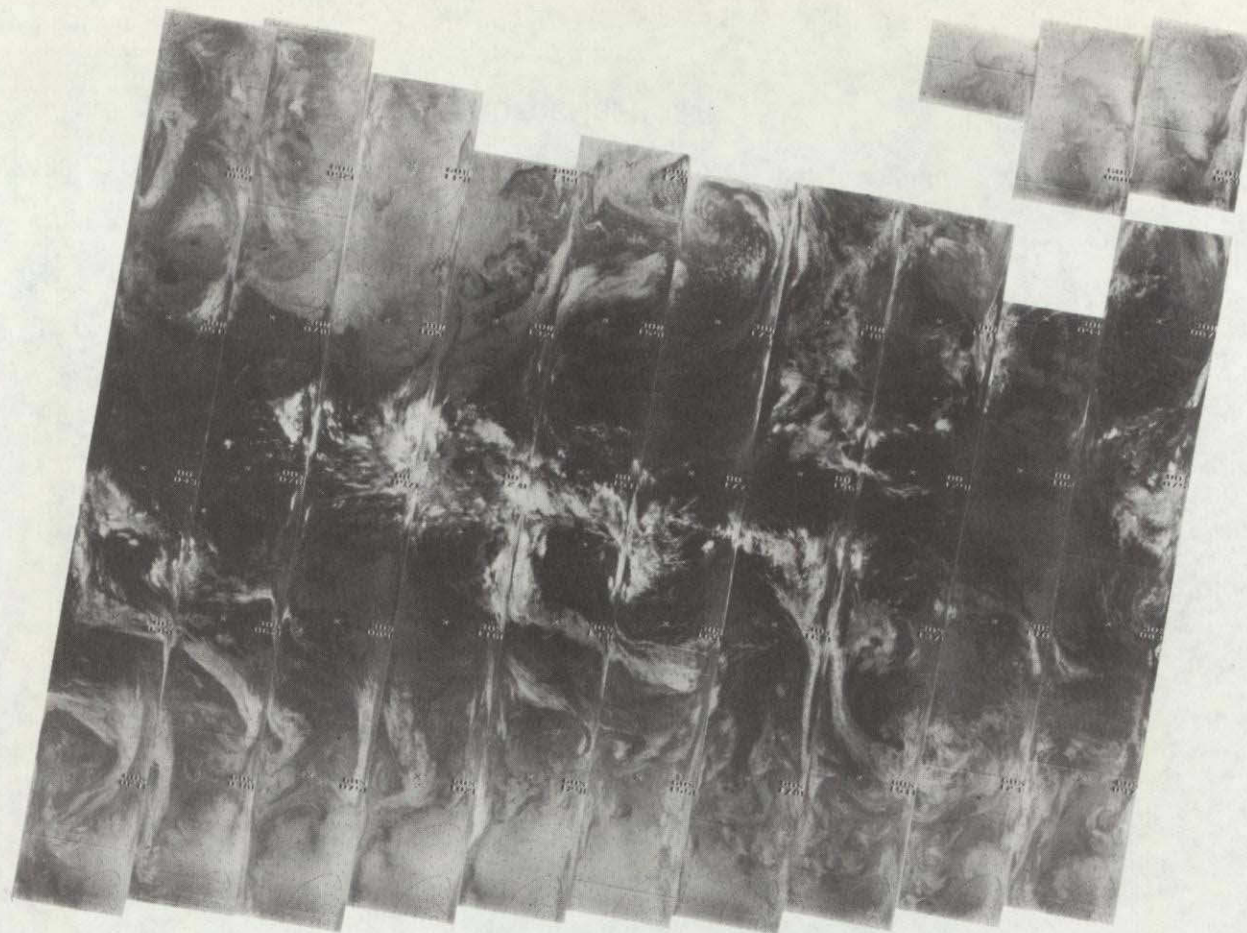
2489 2488 2487 2486 2485 2484 2483 2482 2481 2480 2479 2478 2477

14 DECEMBER 1975

6.7 μ m

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OF POOR QUALITY

4-94

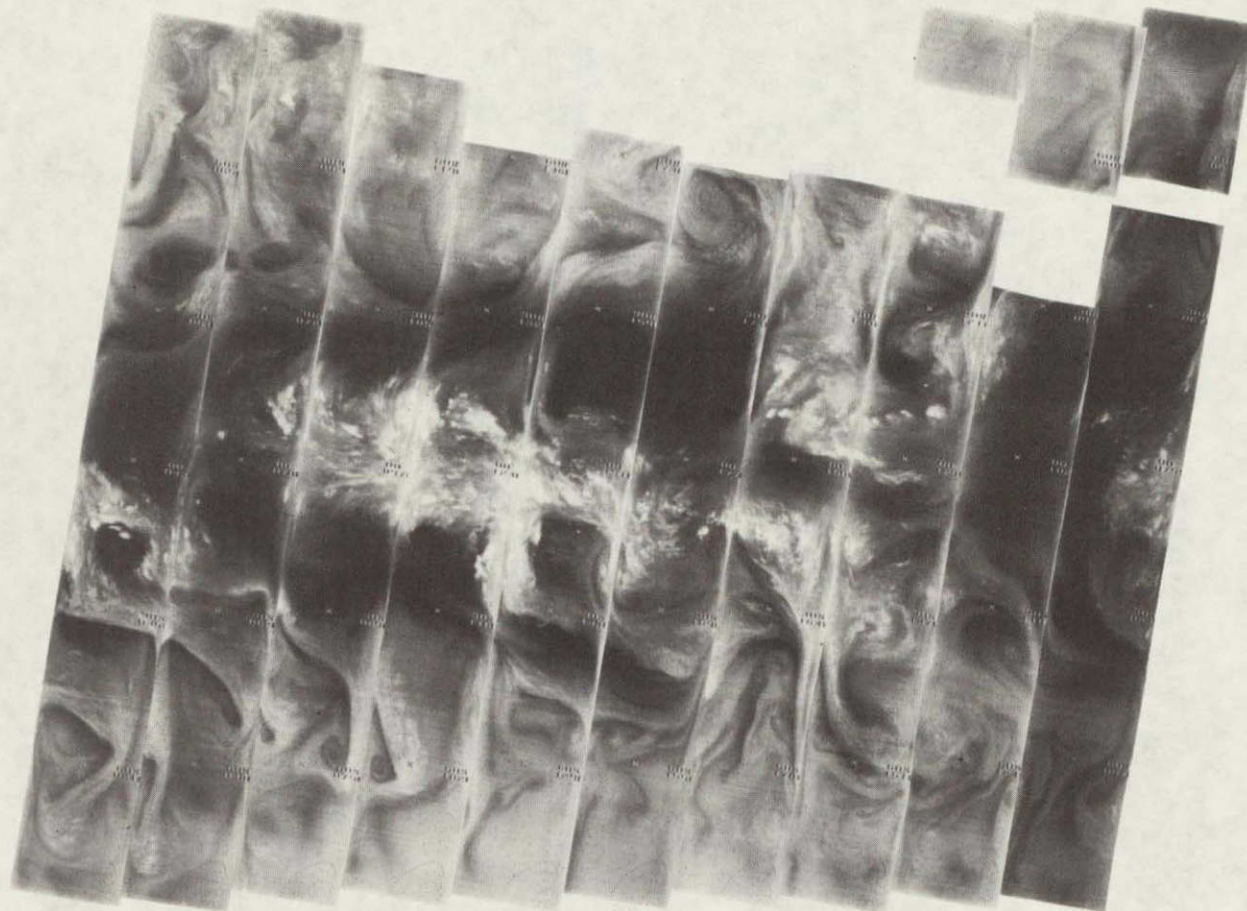


2503 2502 2501 2500 2499 2498 2497 2496 2495 2494 2493 2492 2491 2490

15 DECEMBER 1975

11.5 μm

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2503 2502 2501 2500 2499 2498 2497 2496 2495 2494 2493 2492 2491 2490

15 DECEMBER 1975

6.7 μ m

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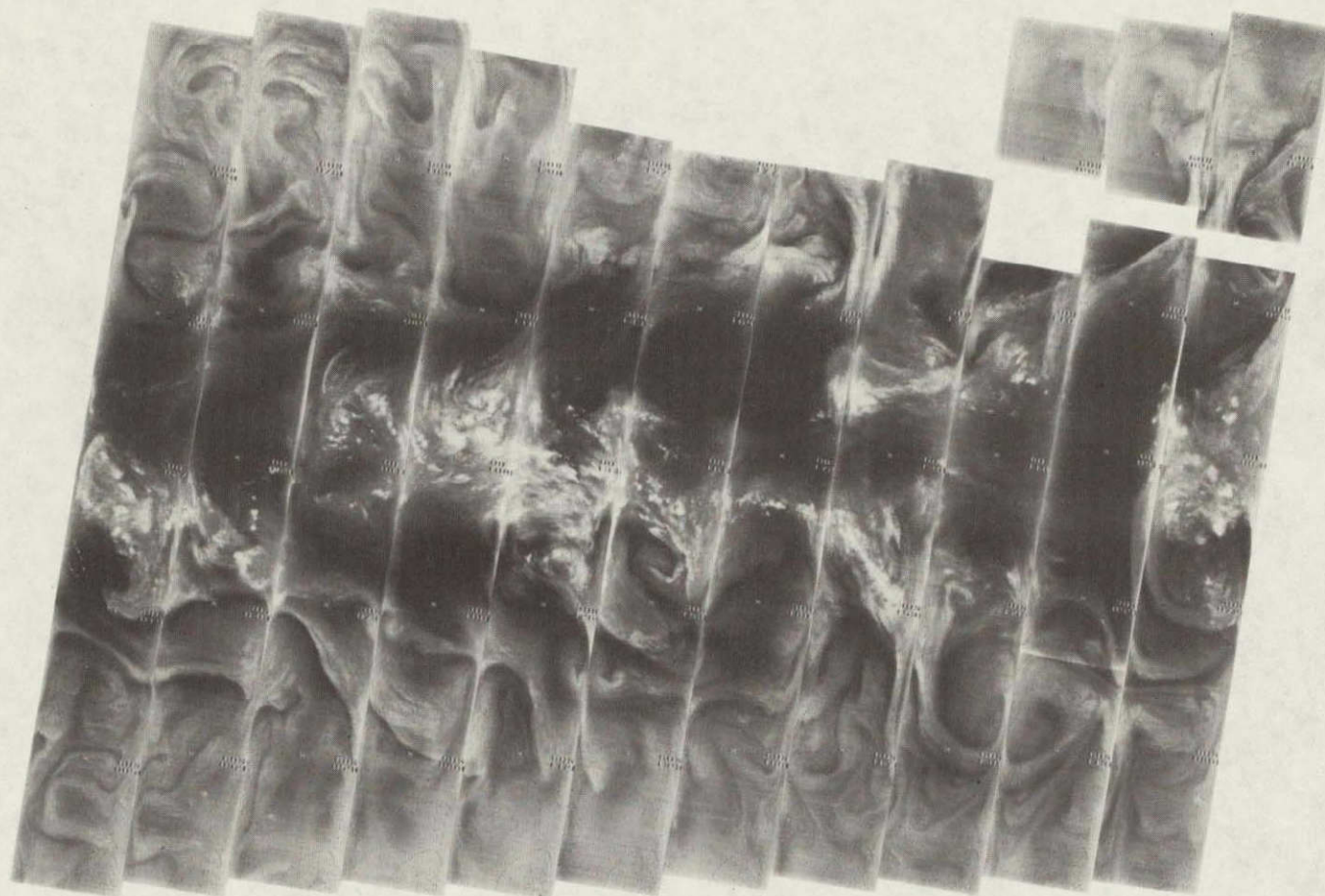


2516 2515 2514 2513 2512 2511 2510 2509 2508 2507 2506 2505 2504

16 DECEMBER 1975

11.5 μm

ORIGINAL PAGE IS
OF POOR QUALITY

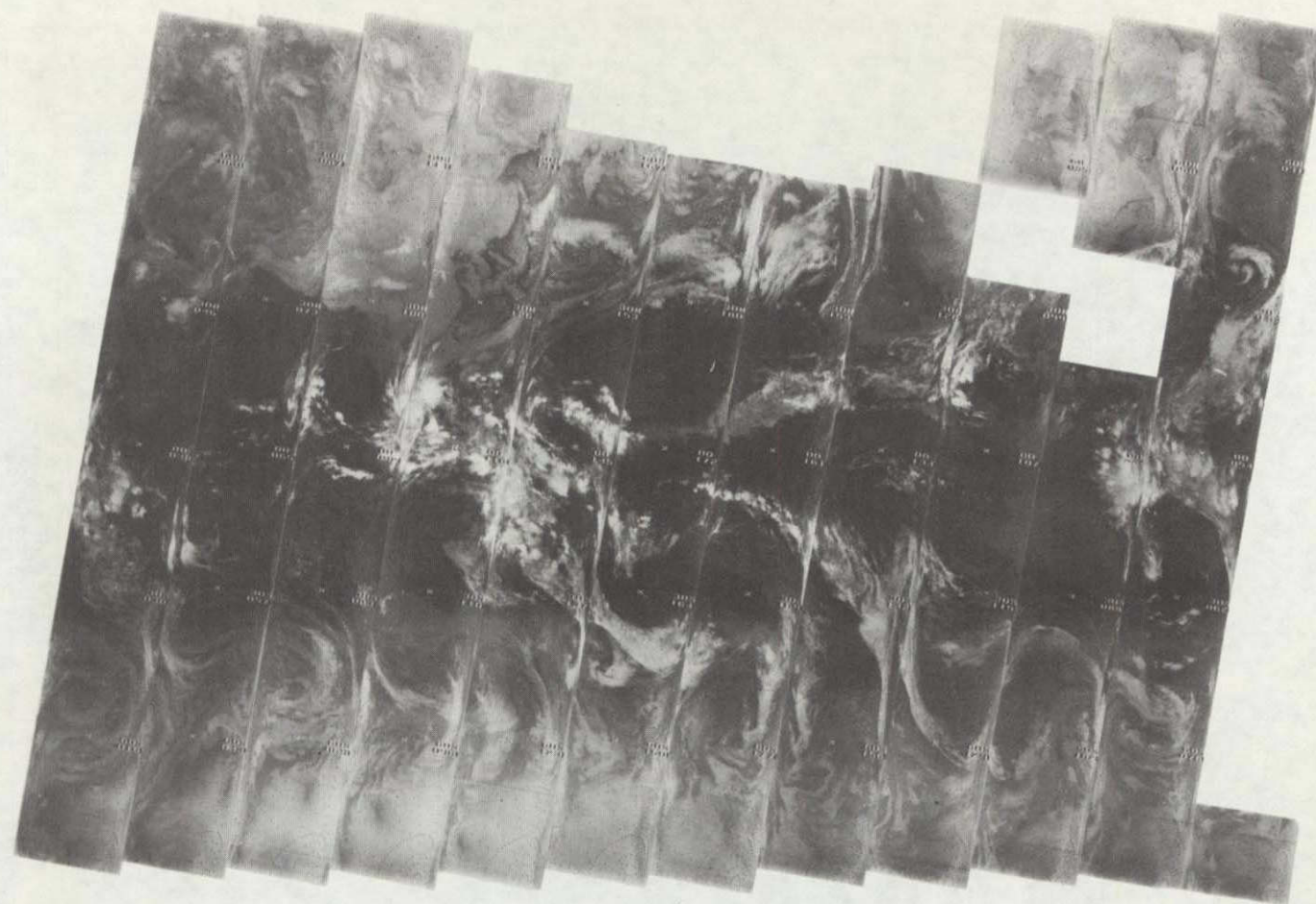


2516 2515 2514 2513 2512 2511 2510 2509 2508 2507 2506 2505 2504

16 DECEMBER 1975

6.7 μm

4-98



2530 2529 2528 2527 2526 2525 2524 2523 2522 2521 2520 2519 2518 2517

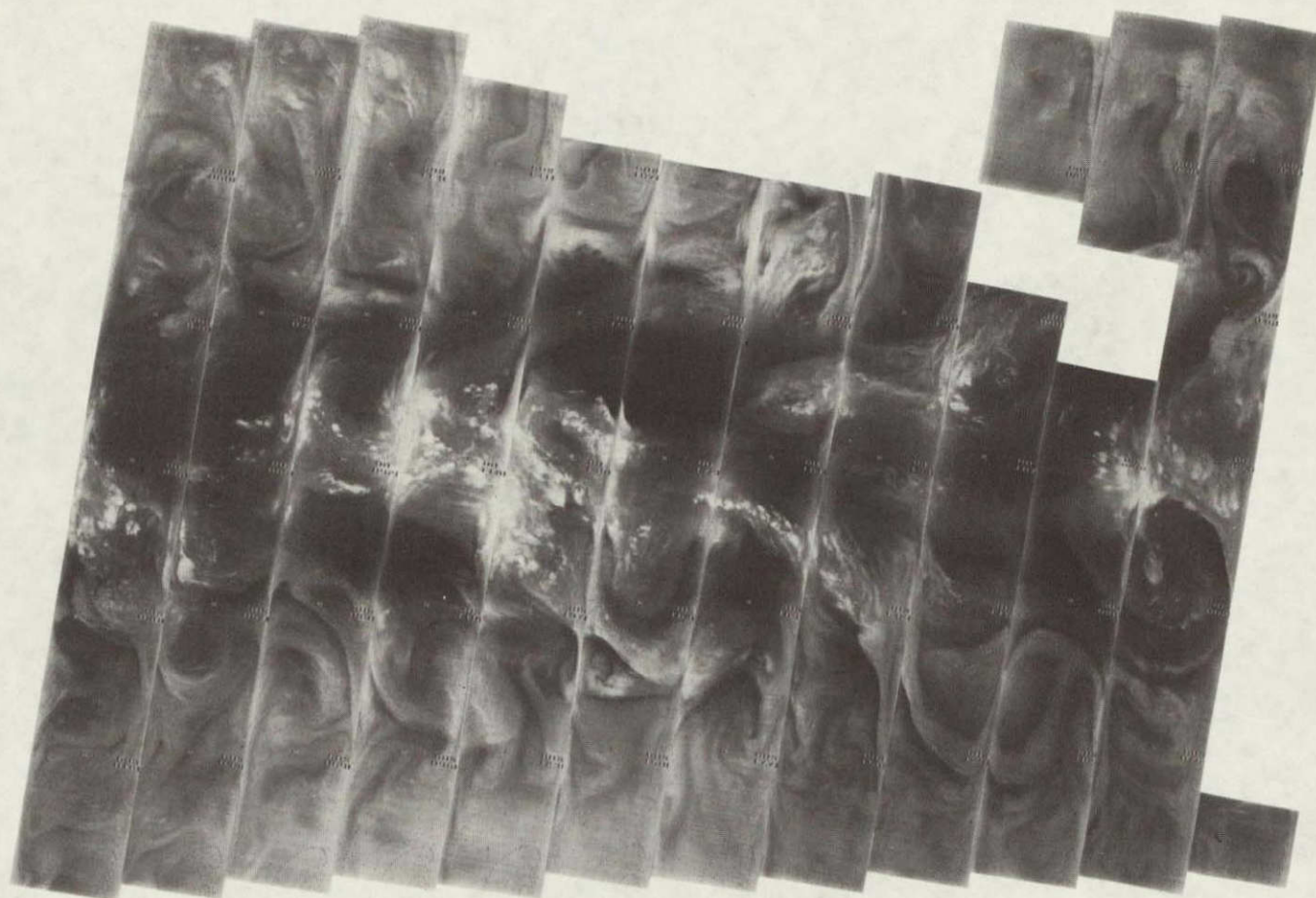
17 DECEMBER 1975

11.5 μm

4-99

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2530 2529 2528 2527 2526 2525 2524 2523 2522 2521 2520 2519 2518 2517

17 DECEMBER 1975

6.7 μm

4-100

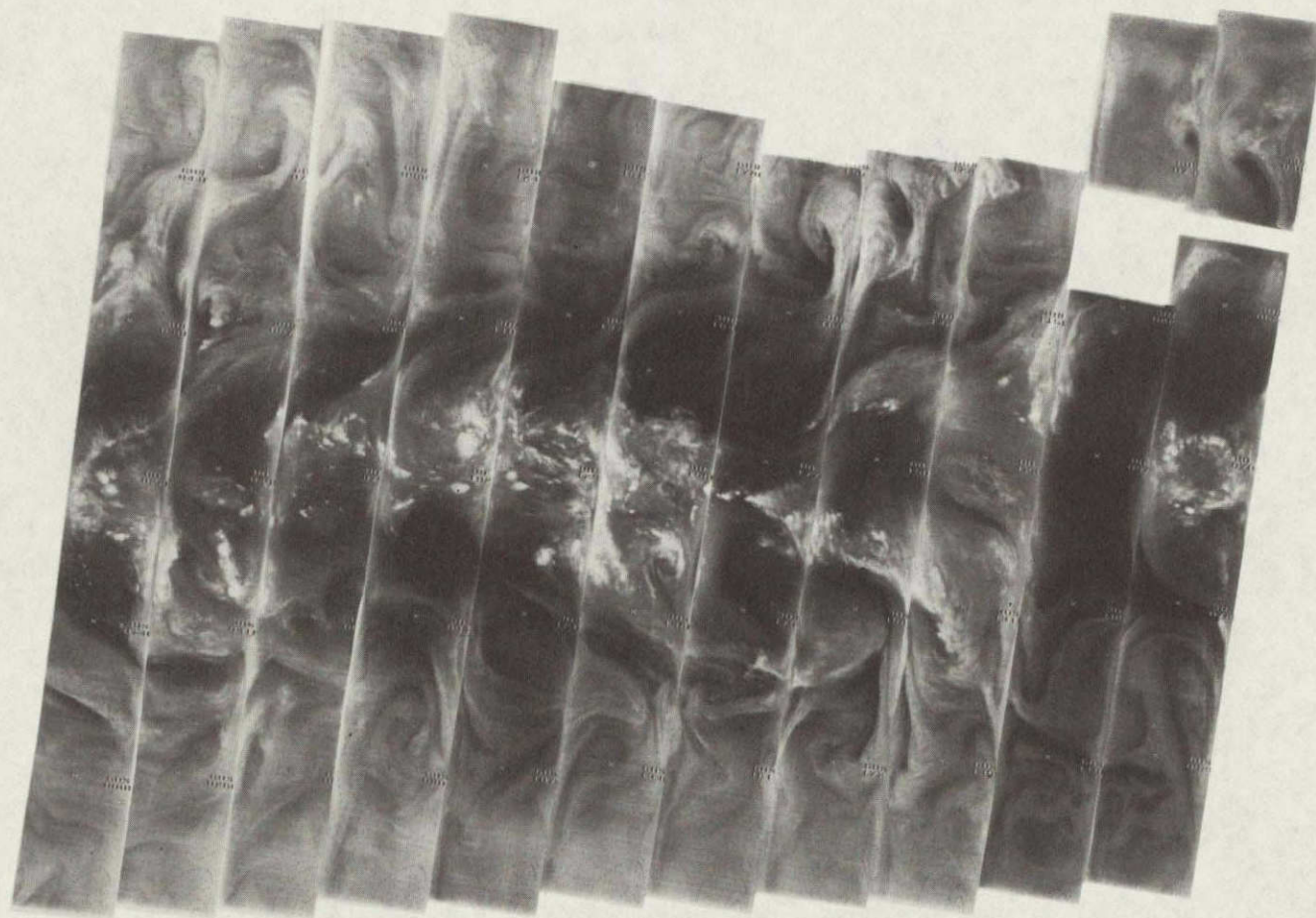


2543 2542 2541 2540 2539 2538 2537 2536 2535 2534 2533 2532 2531

18 DECEMBER 1975

11.5 μ m

4-101



2543 2542 2541 2540 2539 2538 2537 2536 2535 2534 2533 2532 2531

18 DECEMBER 1975

6.7 μm

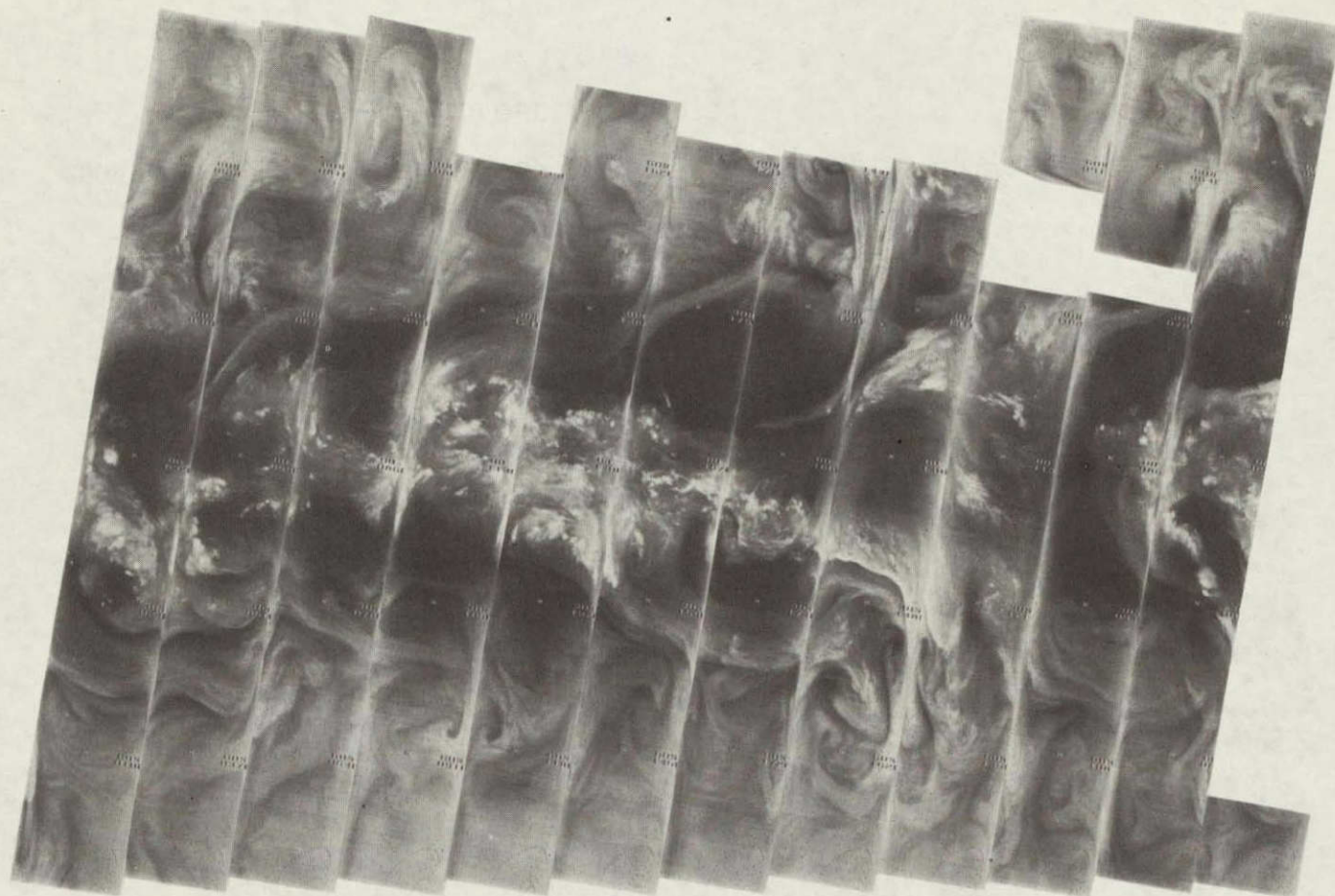


2556 2555 2554 2553 2552 2551 2550 2549 2548 2547 2546 2545 2544

19 DECEMBER 1975

11.5 μm

4-103

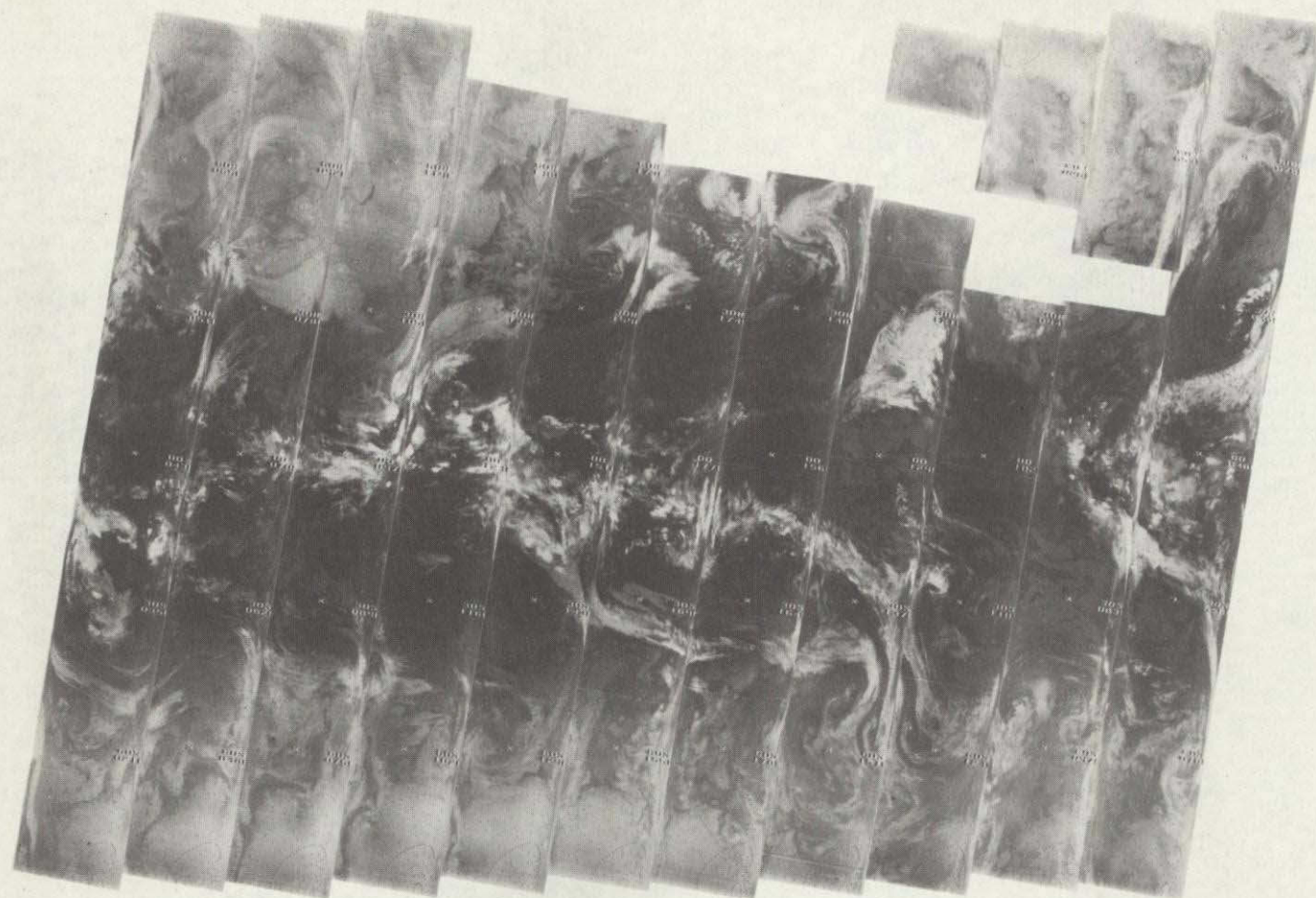


2556 2555 2554 2553 2552 2551 2550 2549 2548 2547 2546 2545 2544

19 DECEMBER 1975

6.7 μm

4-104

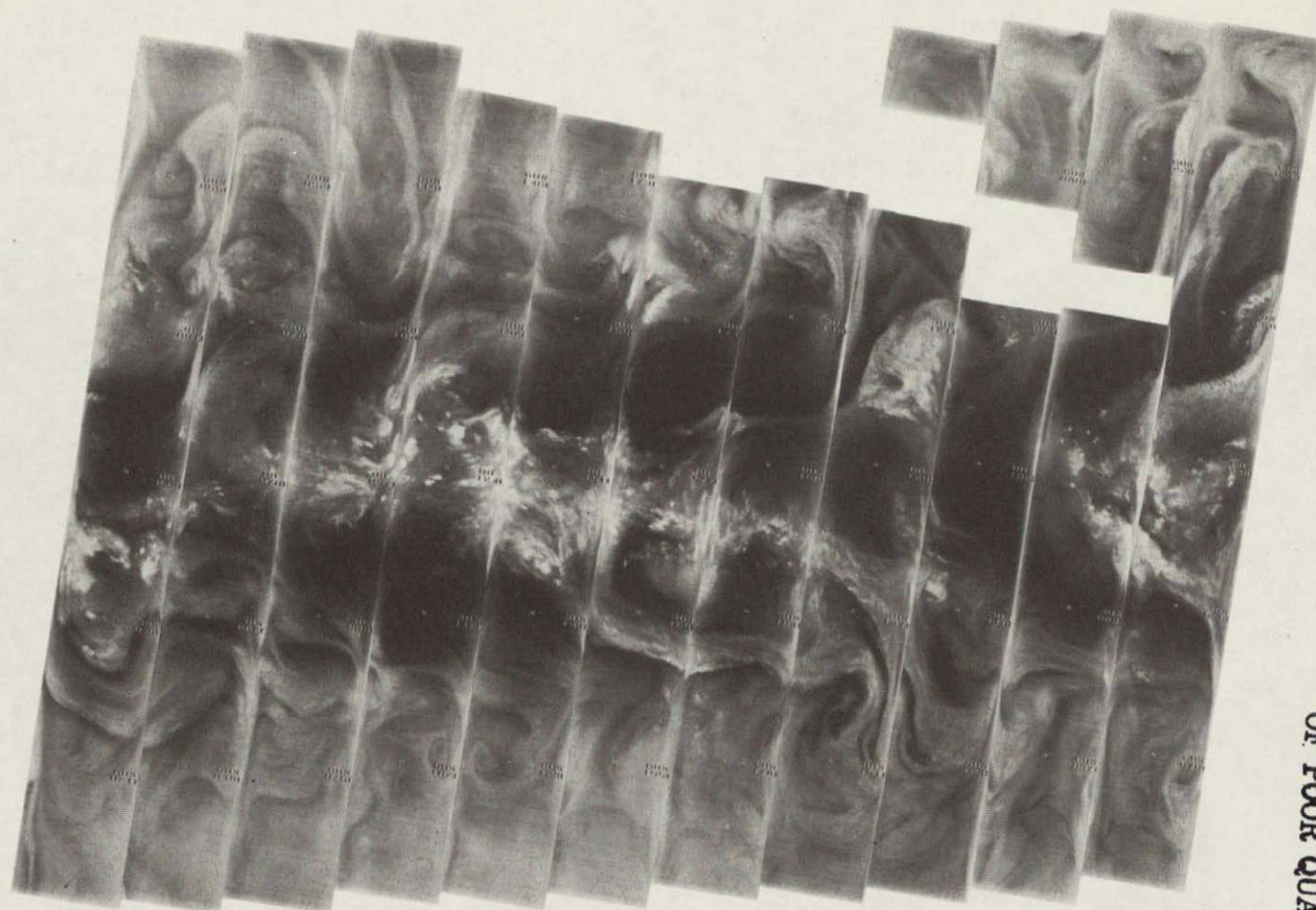


2570 2569 2568 2567 2566 2565 2564 2563 2562 2561 2560 2559 2558 2557

20 DECEMBER 1975

11.5 μm

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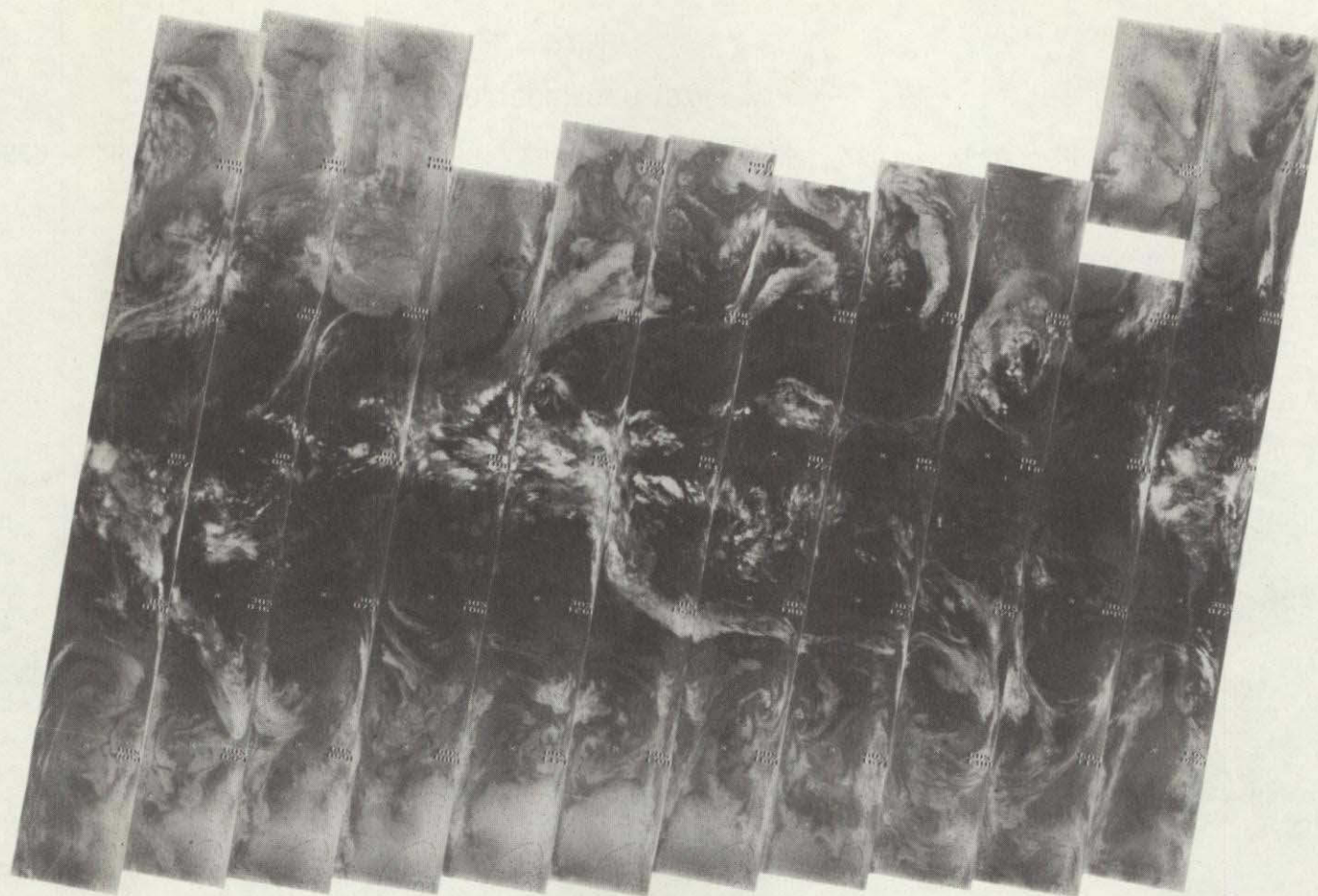


2570 2569 2568 2567 2566 2565 2564 2563 2562 2561 2560 2559 2558 2557

20 DECEMBER 1975

6.7 μ m

4-106



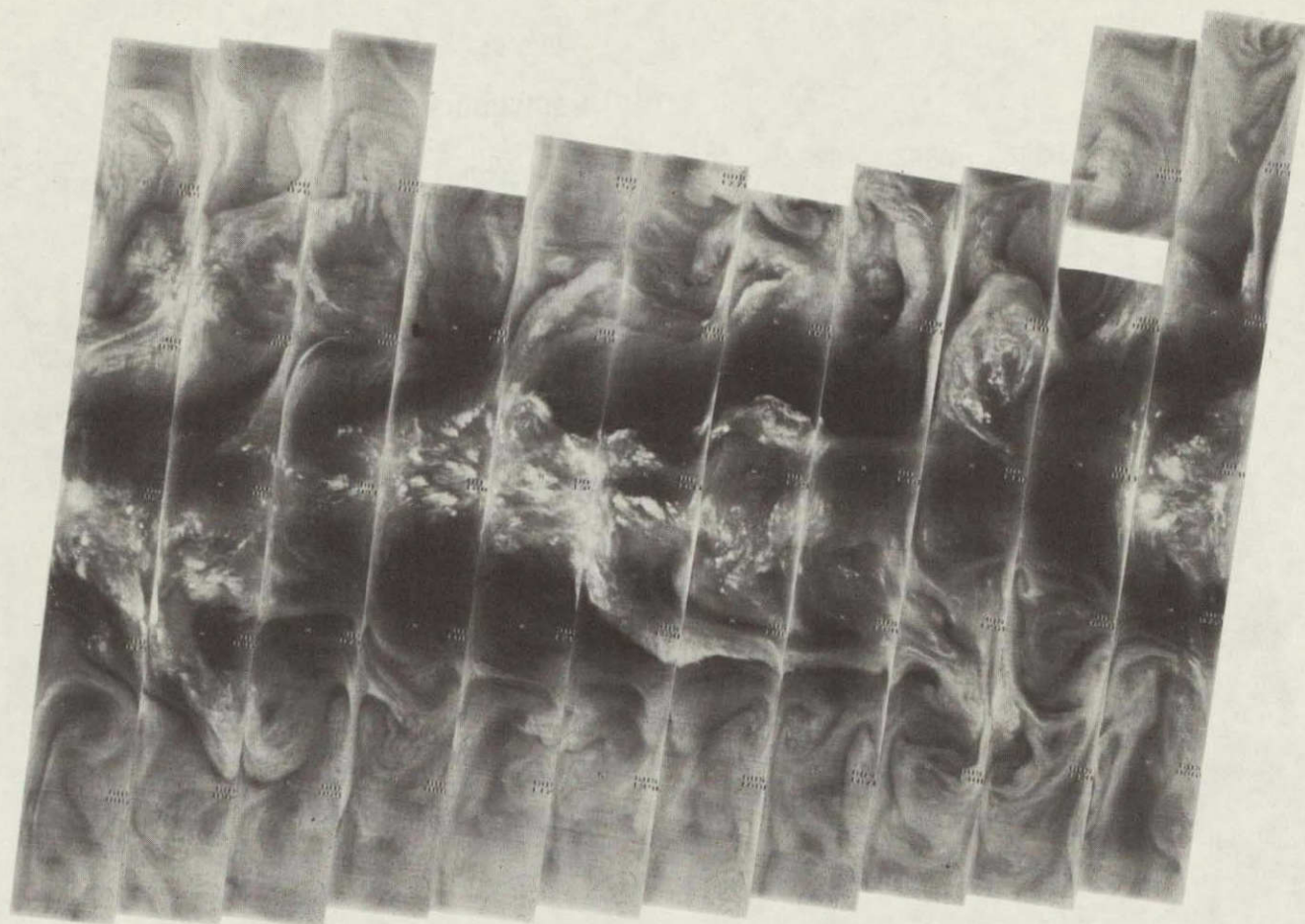
2583 2582 2581 2580 2579 2578 2577 2576 2575 2574 2573 2572 2571

21 DECEMBER 1975

11.5 μm

OL 1003 00111111
11.5 μm

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OF POOR QUALITY



2583 2582 2581 2580 2579 2578 2577 2576 2575 2574 2573 2572 2571

21 DECEMBER 1975

6.7 μ m

4-107

4-108

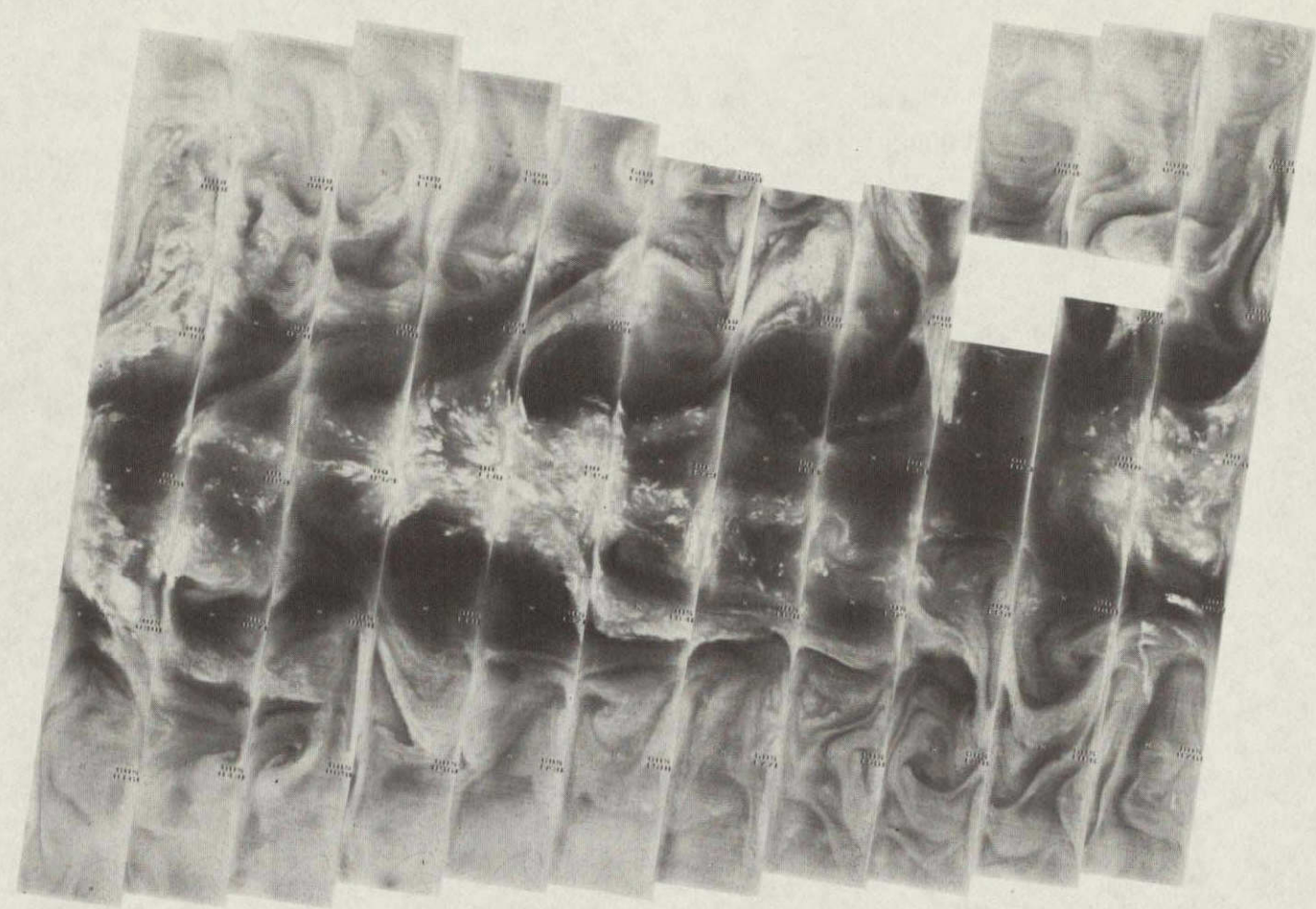


2597 2596 2595 2594 2593 2592 2591 2590 2589 2588 2587 2586 2585 2584

22 DECEMBER 1975

11.5 μ m

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OF POOR QUALITY



2597 2596 2595 2594 2593 2592 2591 2590 2589 2588 2587 2586 2585 2584

22 DECEMBER 1975

6.7 μ m

4-109



2610 2609 2608 2607 2606 2605 2604 2603 2602 2601 2600 2599 2598

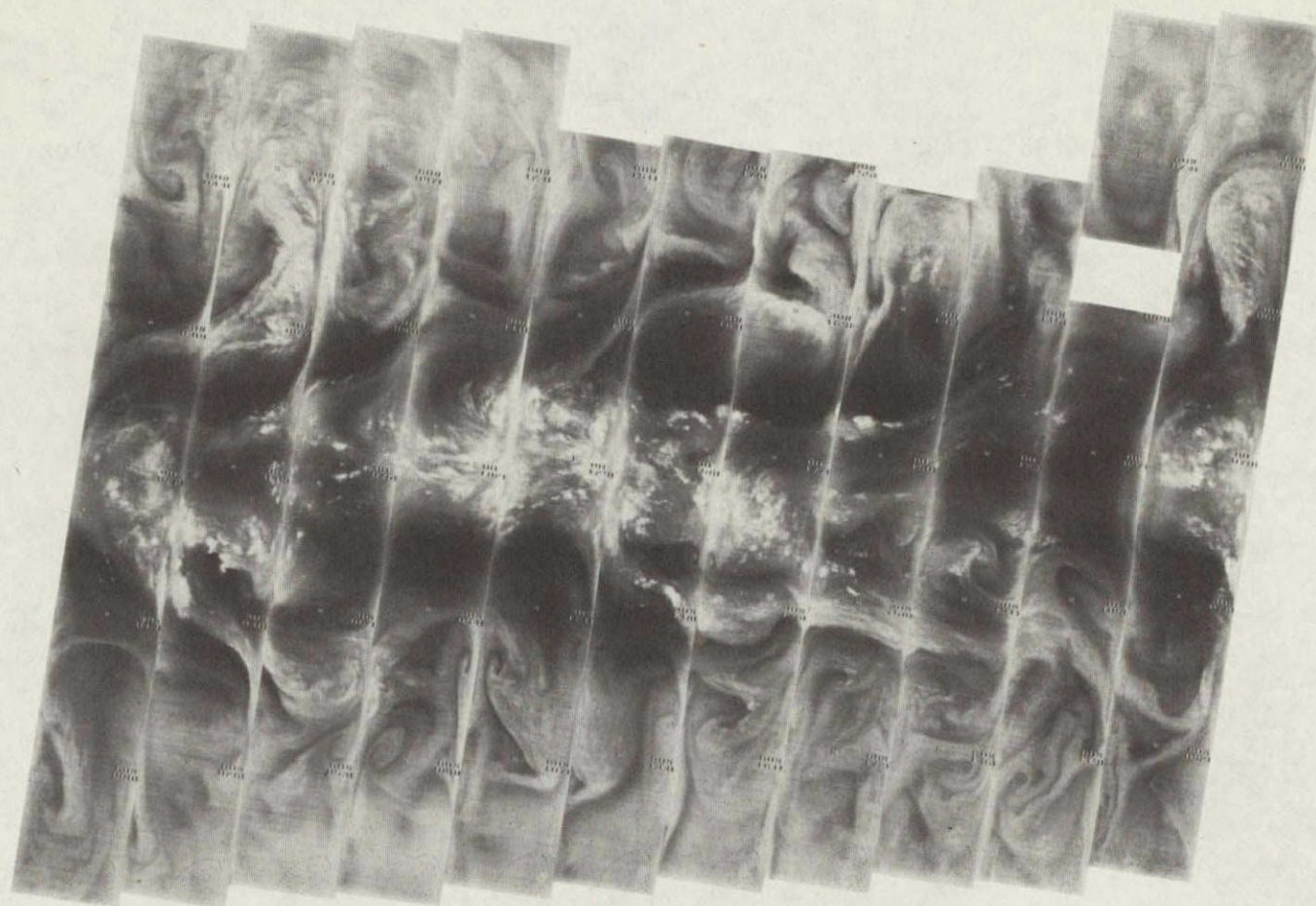
23 DECEMBER 1975

11.5 μm

4-110

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QUALITY

4-111



2610 2609 2608 2607 2606 2605 2604 2603 2602 2601 2600 2599 2598

23 DECEMBER 1975

6.7 μ m

4-112



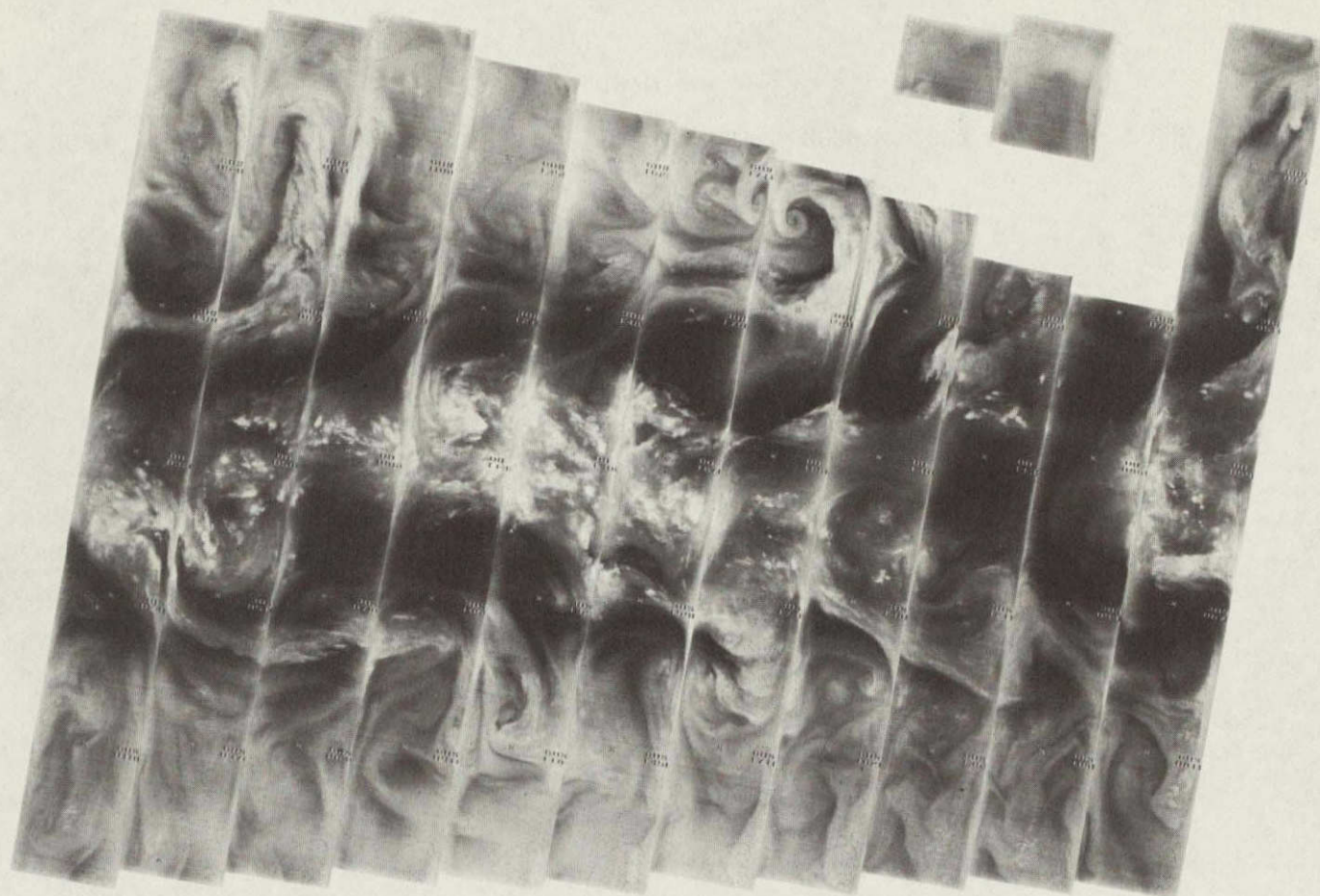
2623 2622 2621 2620 2619 2618 2617 2616 2615 2614 2613 2612 2611

24 DECEMBER 1975

11.5 μ m

C-3

4-113

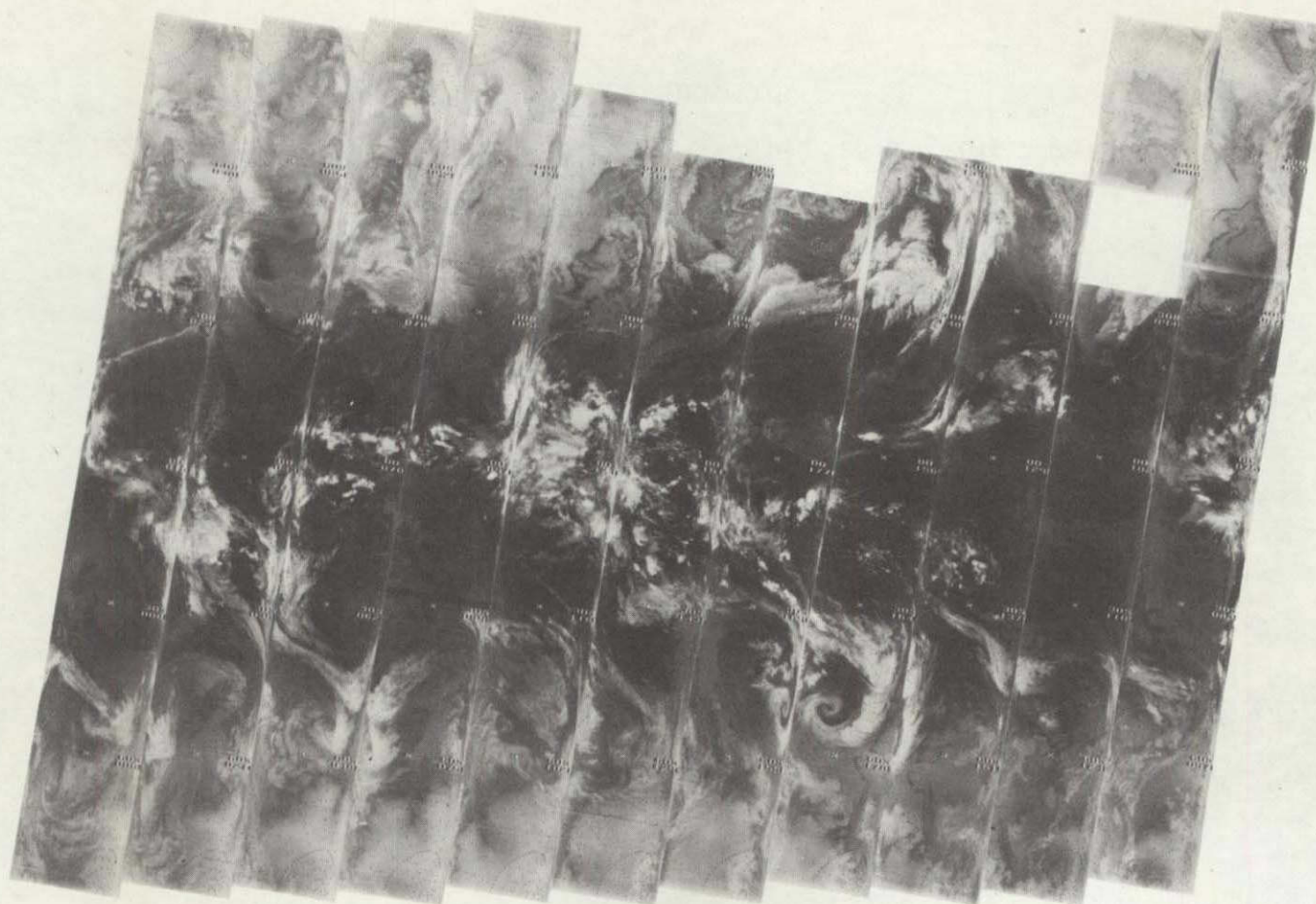


2623 2622 2621 2620 2619 2618 2617 2616 2615 2614 2613 2612 2611

24 DECEMBER 1975

6.7 μm

4-114

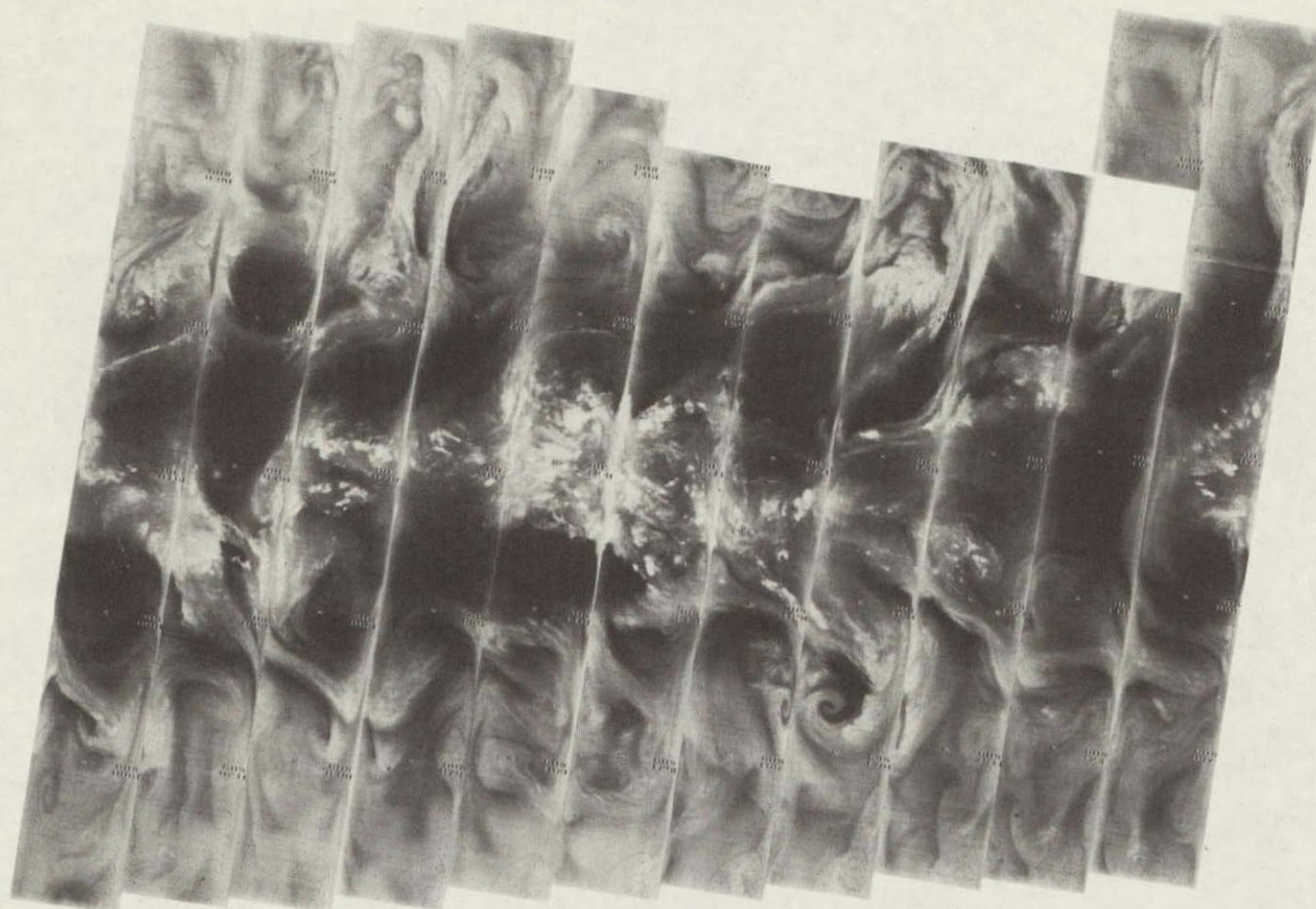


2637 2636 2635 2634 2633 2632 2631 2630 2629 2628 2627 2626 2625 2624

25 DECEMBER 1975

11.5 μm

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OF POOR QUALITY



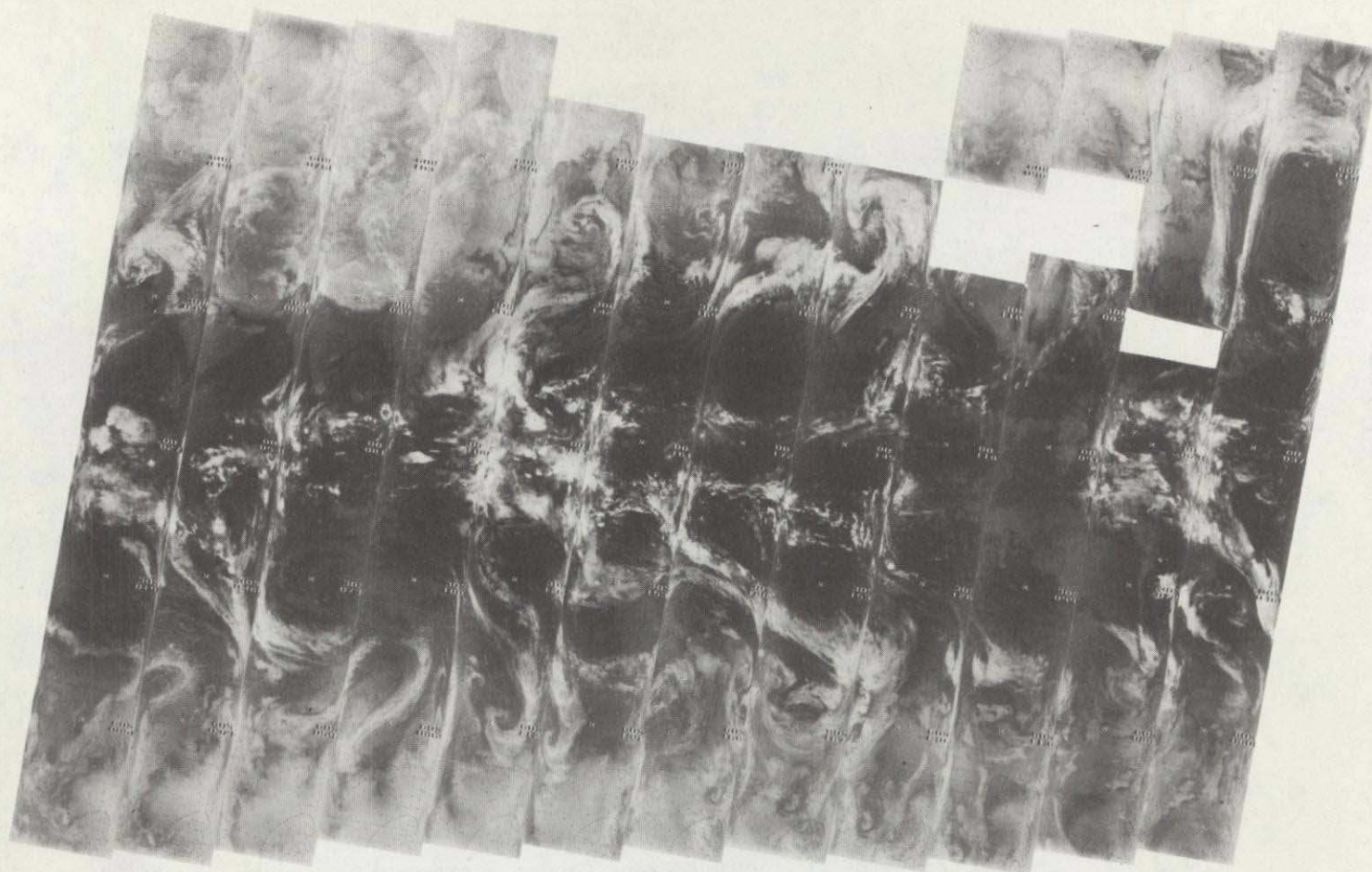
2637 2636 2635 2634 2633 2632 2631 2630 2629 2628 2627 2626 2625 2624

25 DECEMBER 1975

6.7 μ m

4-115

4-116



2650 2649 2648 2647 2646 2645 2644 2643 2642 2641 2640 2639 2638

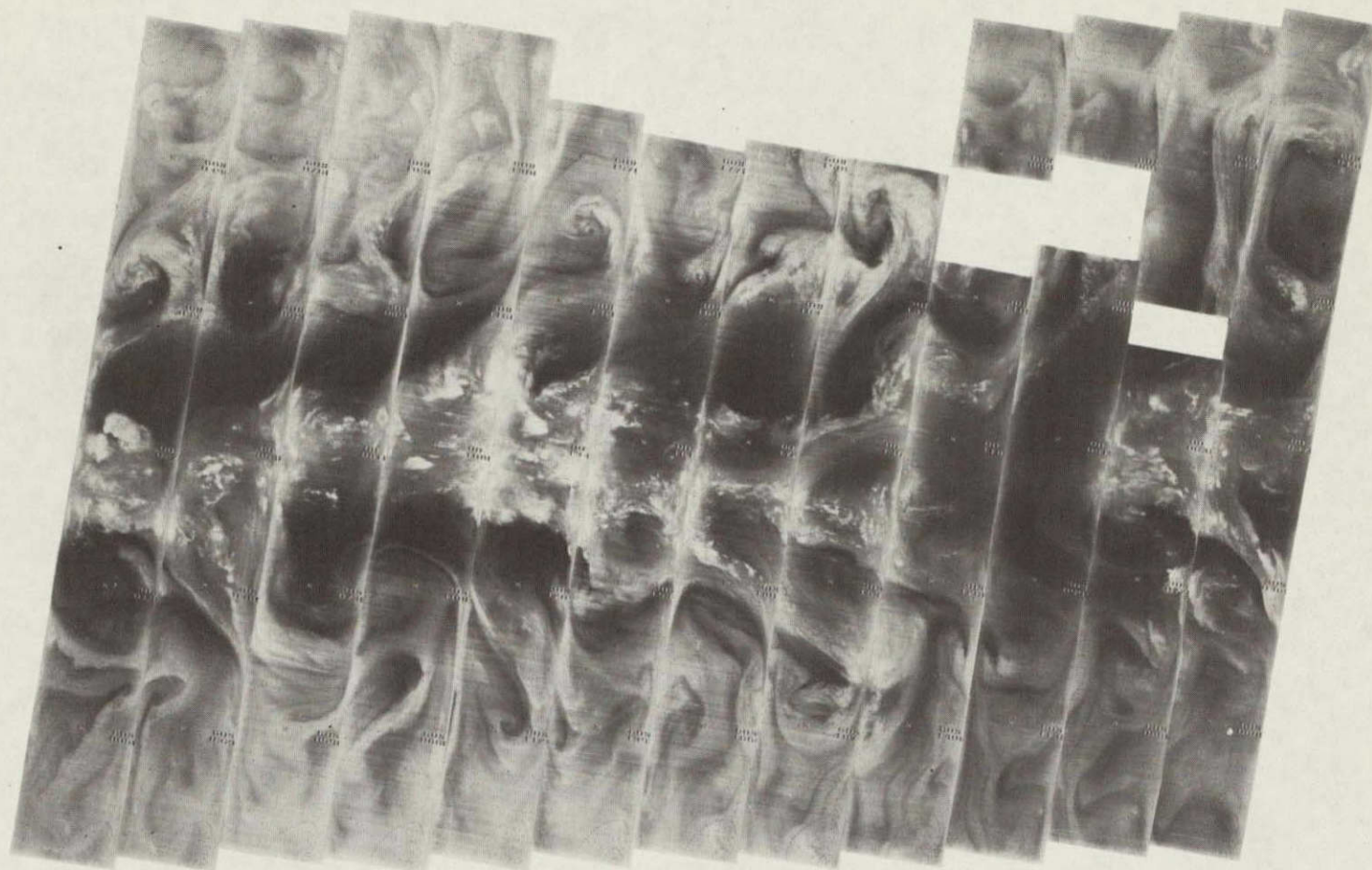
26 DECEMBER 1975

11.5 μm

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OF POOR QUALITY

1

4-117

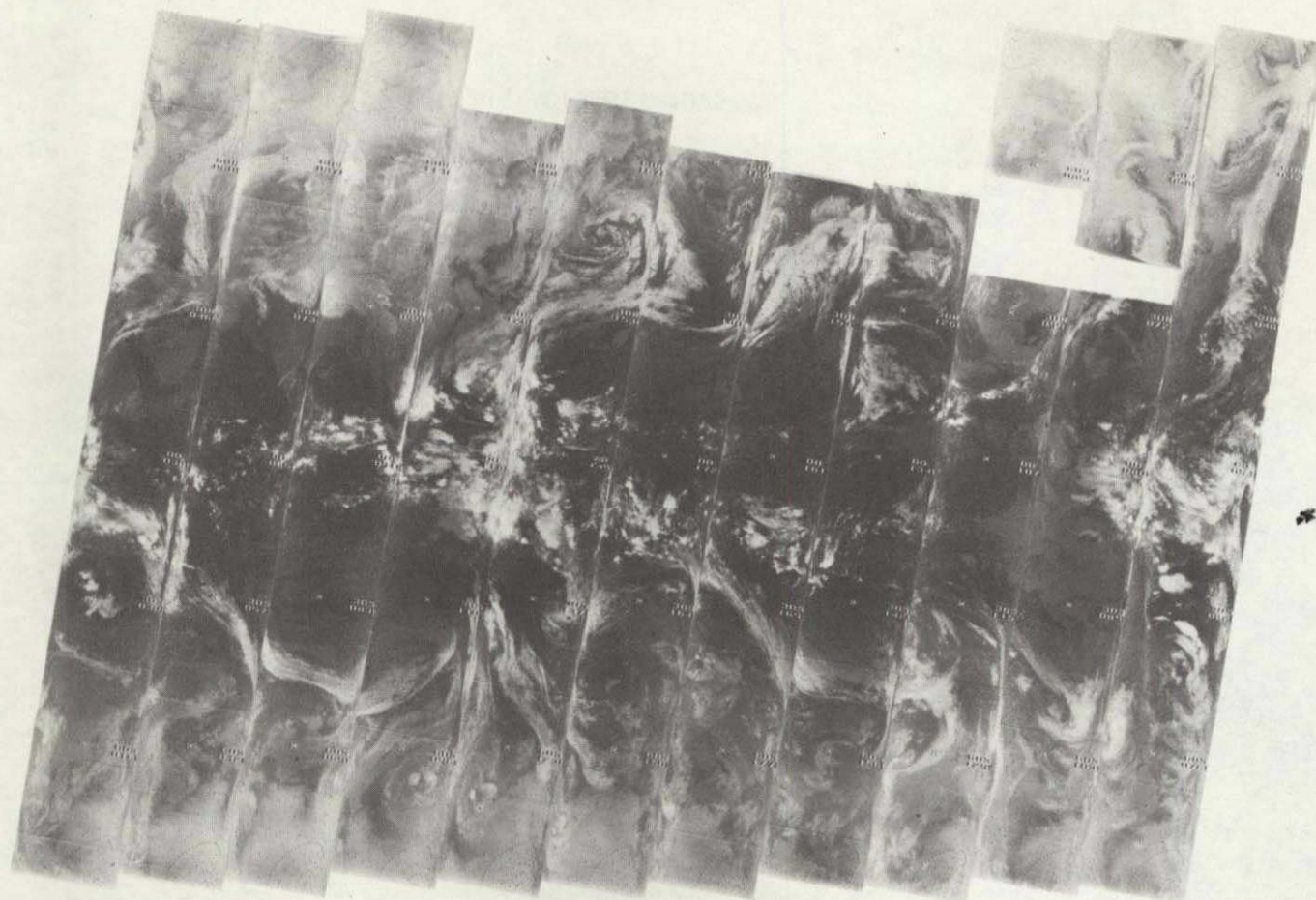


2650 2649 2648 2647 2646 2645 2644 2643 2642 2641 2640 2639 2638

26 DECEMBER 1975

6.7 μ m

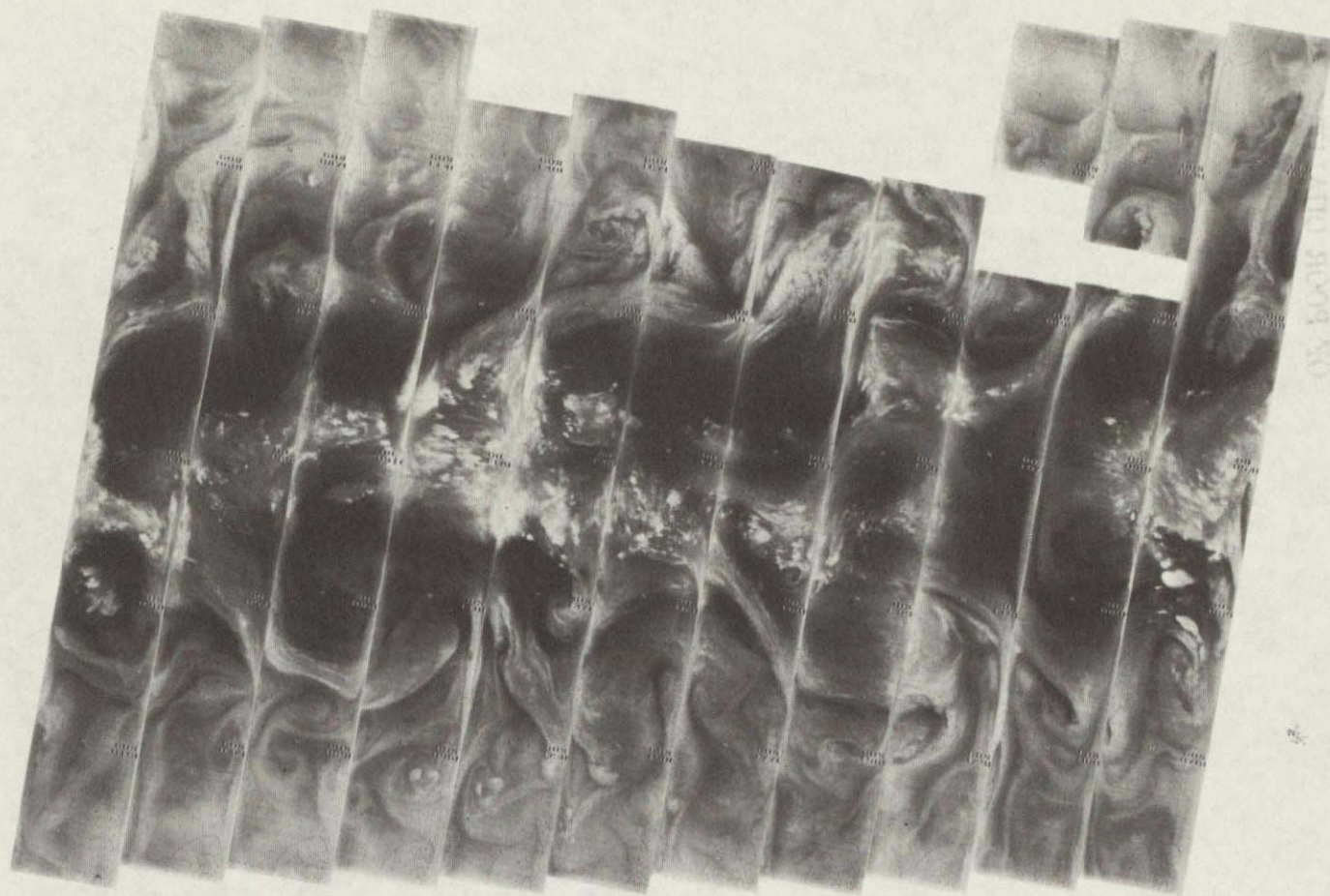
4-118



2664 2663 2662 2661 2660 2659 2658 2657 2656 2655 2654 2653 2652 2651

27 DECEMBER 1975

11.5 μ m



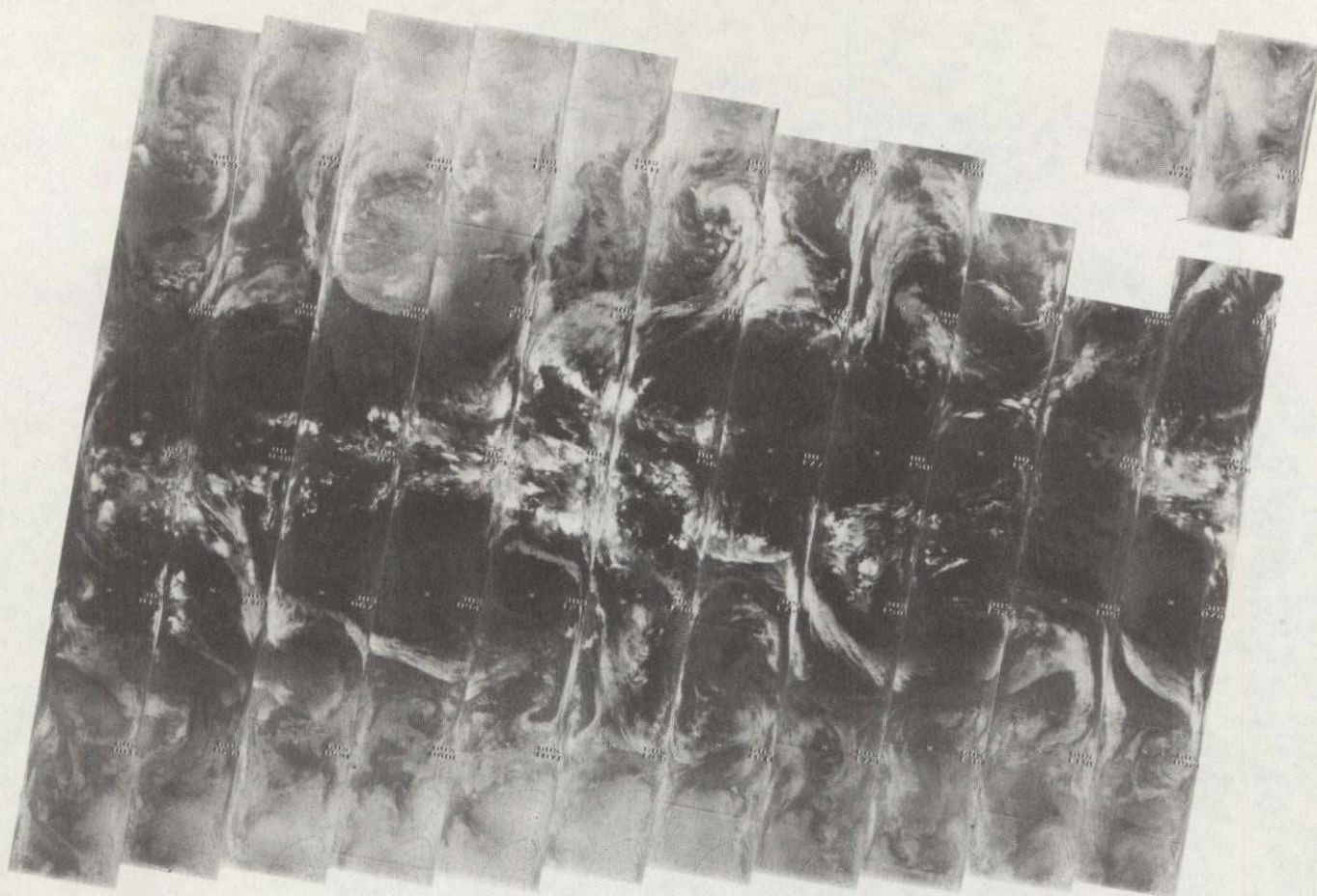
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OF POOR QUALITY

2664 2663 2662 2661 2660 2659 2658 2657 2656 2655 2654 2653 2652 2651

27 DECEMBER 1975

6.7 μ m

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OF POOR QUALITY



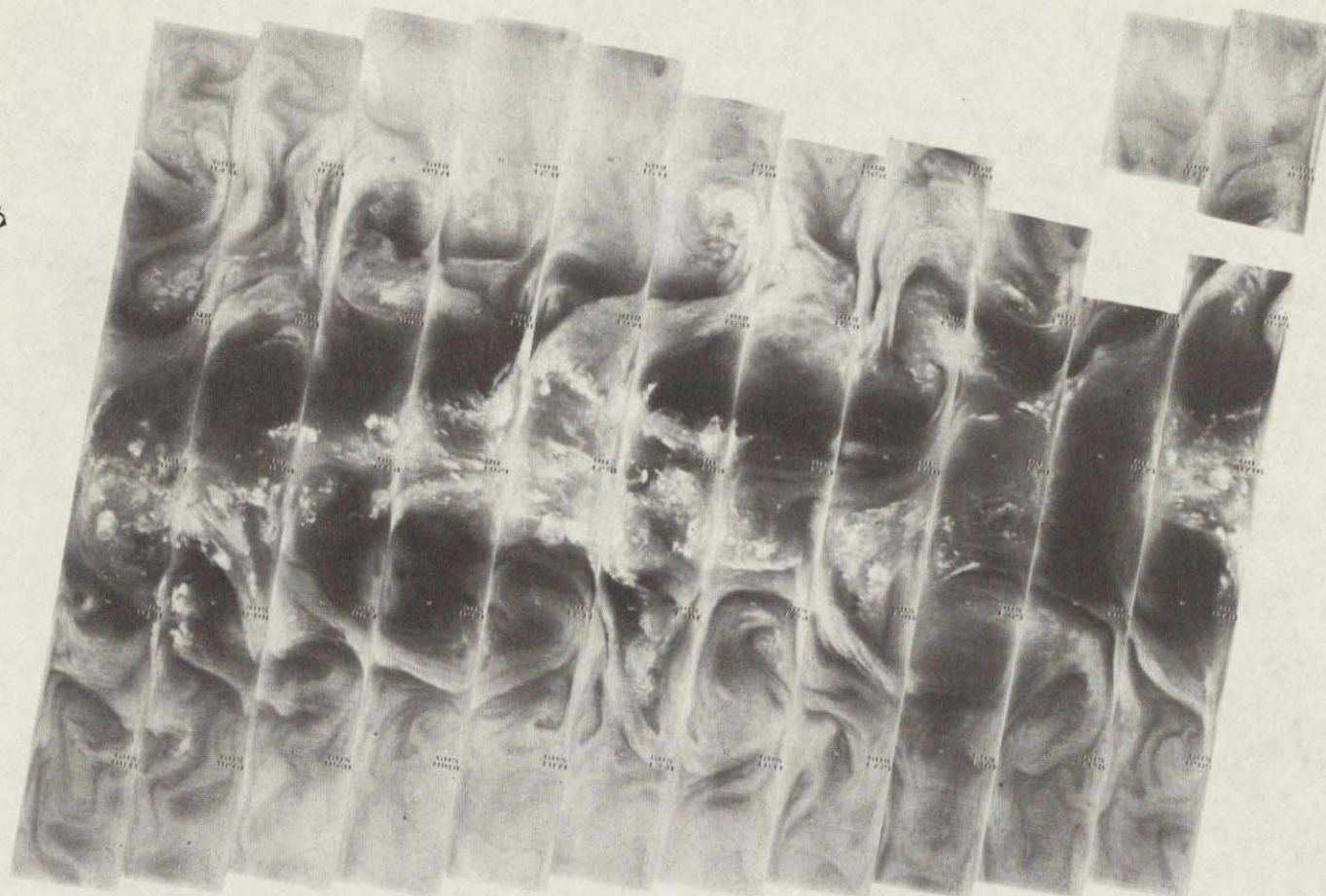
2677 2676 2675 2674 2673 2672 2671 2670 2669 2668 2667 2666 2665

28 DECEMBER 1975

11.5 μ m

4-120

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OF POOR QUALITY

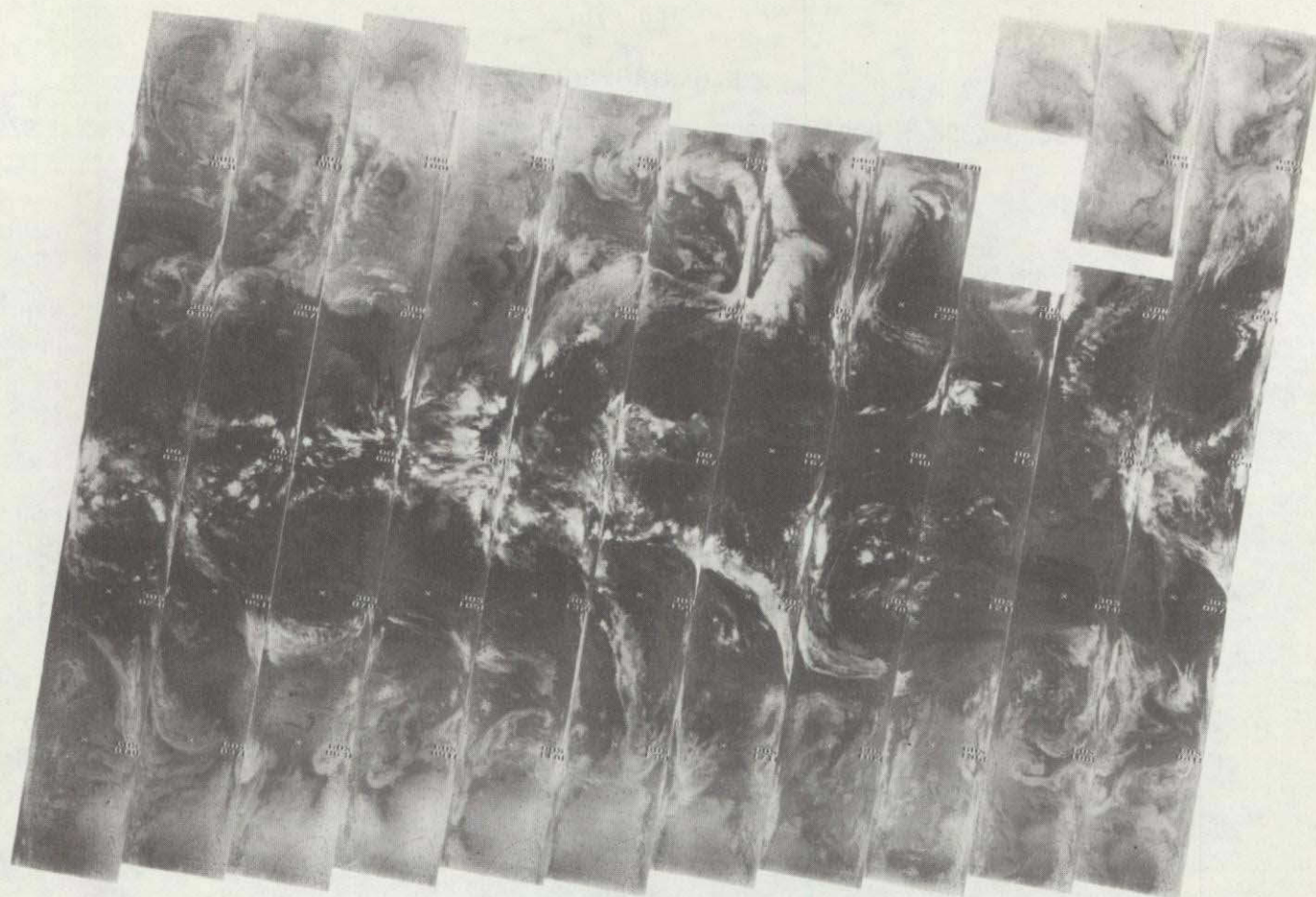


2677 2676 2675 2674 2673 2672 2671 2670 2669 2668 2667 2666 2665

28 DECEMBER 1975

6.7 μ m

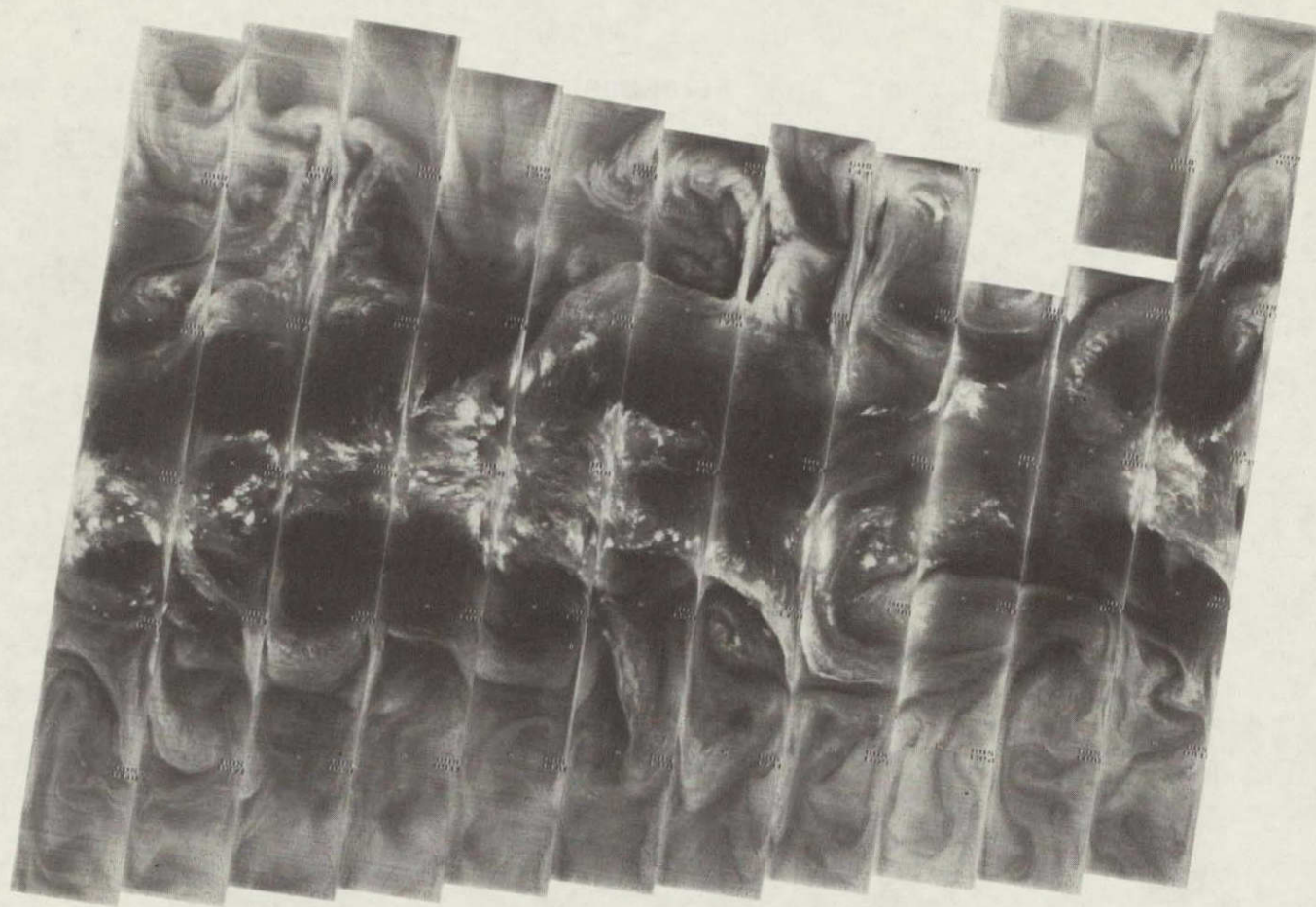
4-122



2690 2689 2688 2687 2686 2685 2684 2683 2682 2681 2680 2679 2678

29 DECEMBER 1975

11.5 μm $^{\circ}$



2690 2689 2688 2687 2686 2685 2684 2683 2682 2681 2680 2679 2678

29 DECEMBER 1975

6.7 μm

4-123

4-124

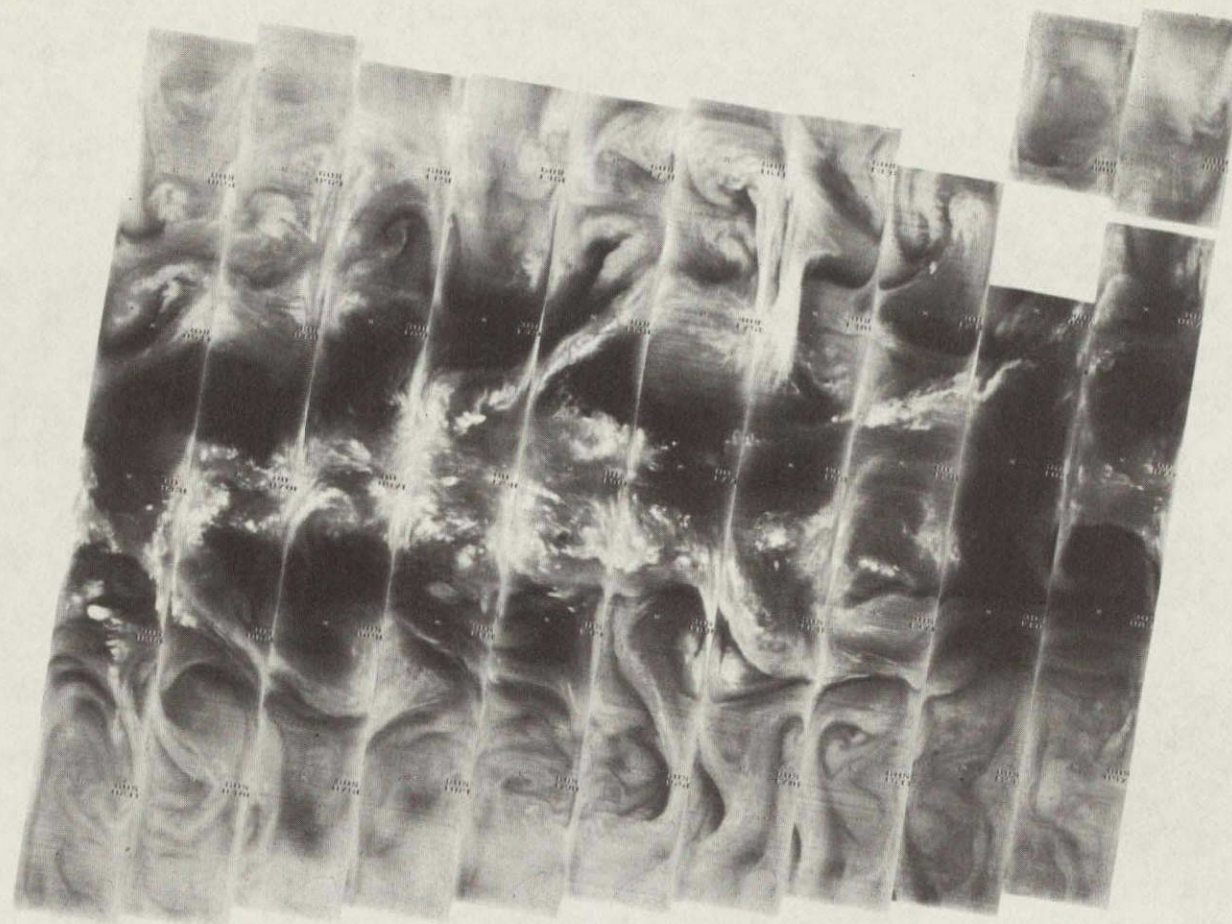


2704 2703 2702 2701 2700 2699 2698 2697 2696 2695 2694 2693 2692 2691

30 DECEMBER 1975

11.5 μm

4-125



2704 2703 2702 2701 2700 2699 2698 2697 2696 2695 2694 2693 2692 2691

30 DECEMBER 1975

6.7 μm



2717 2716 2715 2714 2713 2712 2711 2710 2709 2708 2707 2706 2705

31 DECEMBER 1975

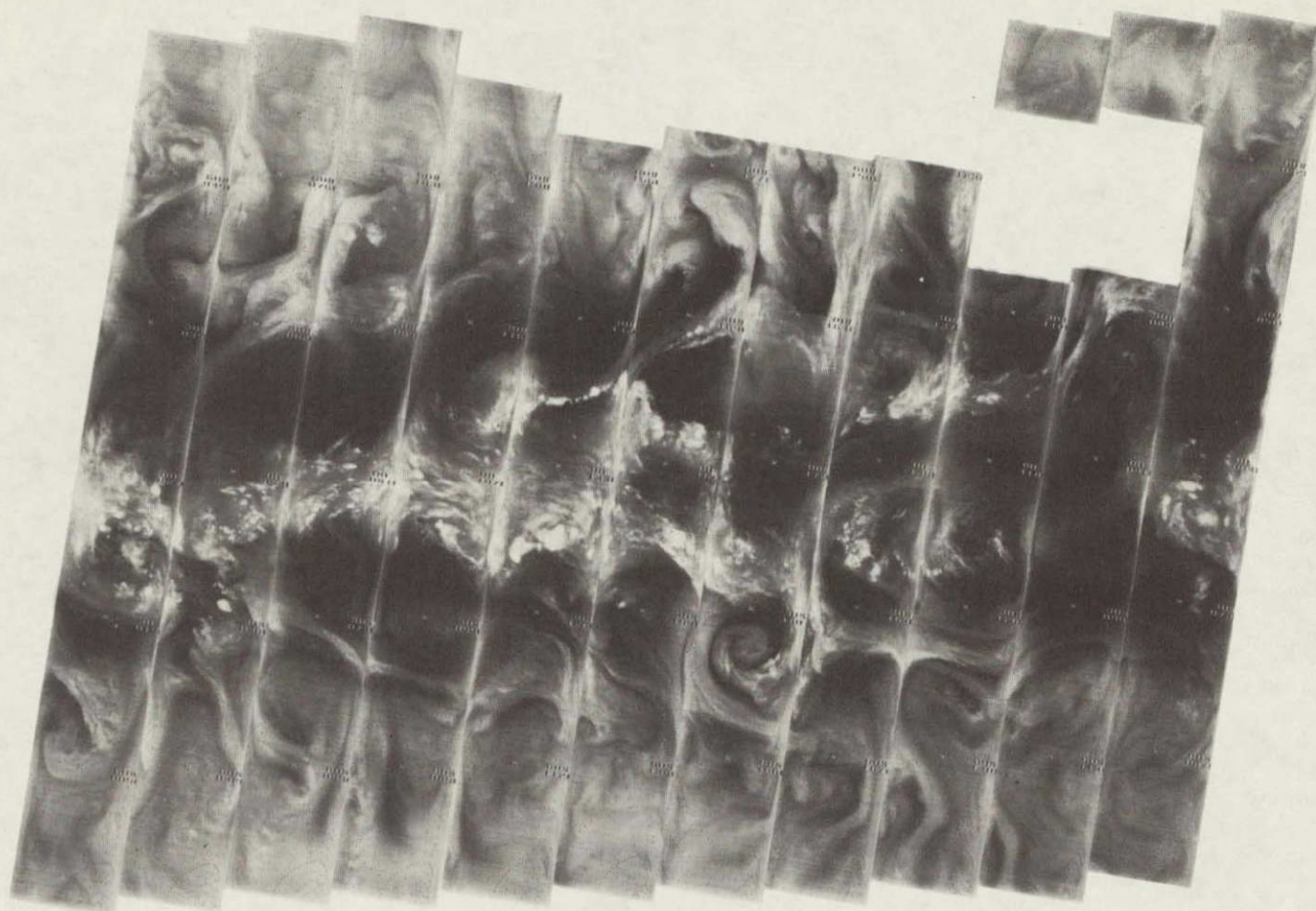
11.5 μm

4-127

2717 2716 2715 2714 2713 2712 2711 2710 2709 2708 2707 2706 2705

31 DECEMBER 1975

6.7 μm



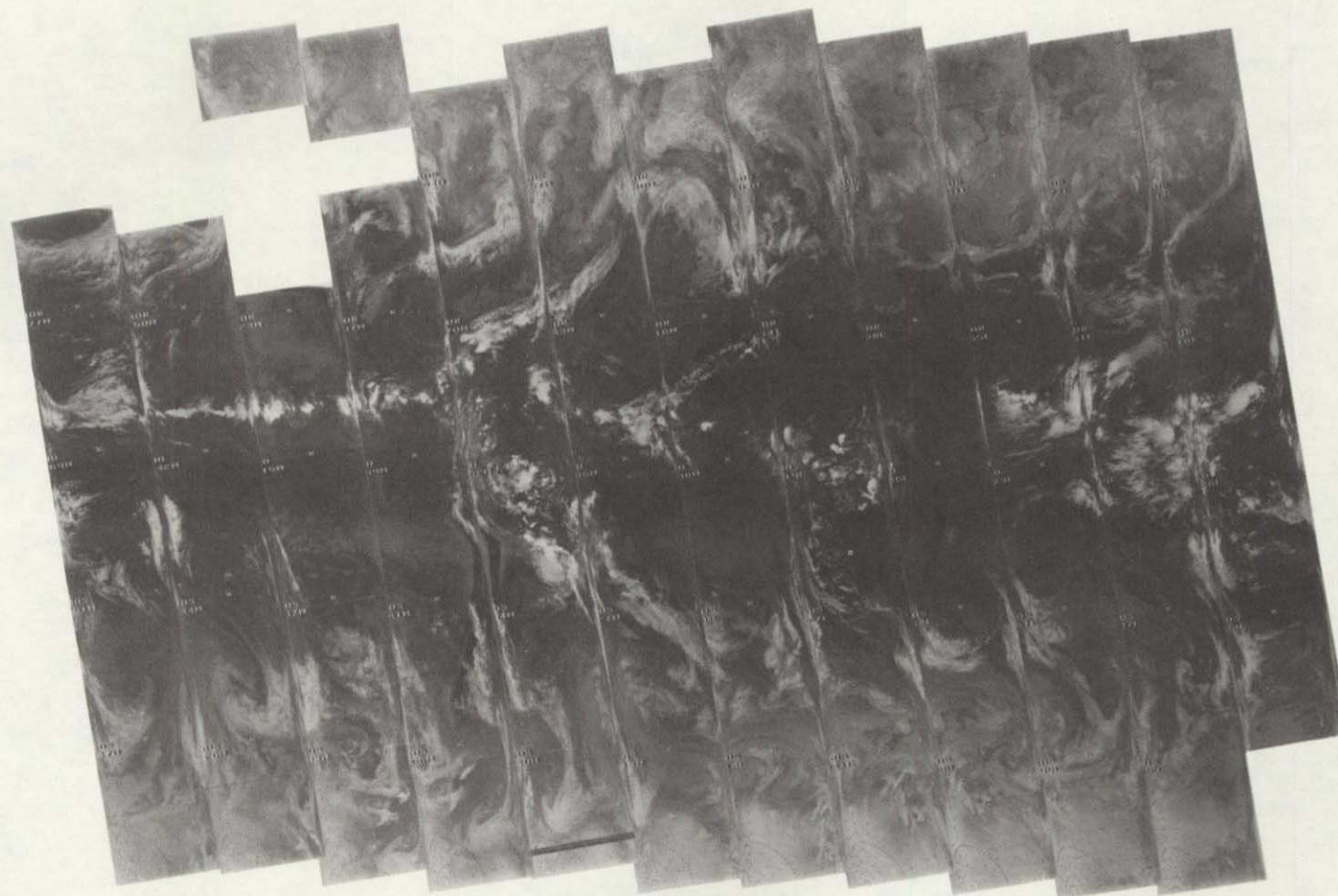
THE FOURTH
OFFICIAL PAGE IS

SECTION 4.2

TEMPERATURE HUMIDITY INFRARED RADIOMETER

DAYTIME MONTAGES

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OF POOR QUALITY



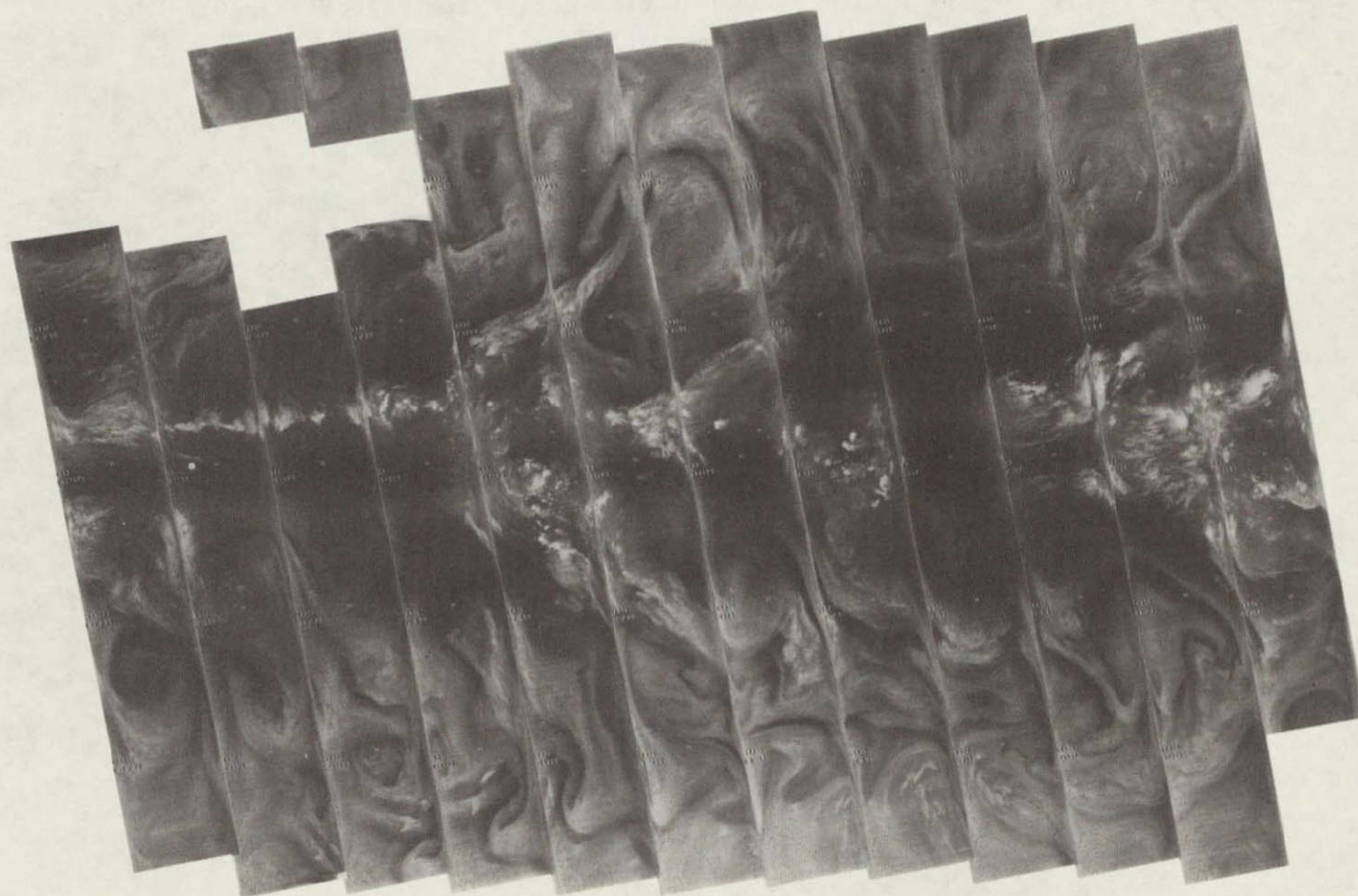
1913 1912 1911 1910 1909 1908 1907 1906 1905 1904 1903 1902 1901

1 NOVEMBER 1975

11.5 μ m

4-130

ORIGINAL PAGE IS
OF POOR QUALITY



1913 1912 1911 1910 1909 1908 1907 1906 1905 1904 1903 1902 1901

1 NOVEMBER 1975

6.7 μm

4-131

4-132

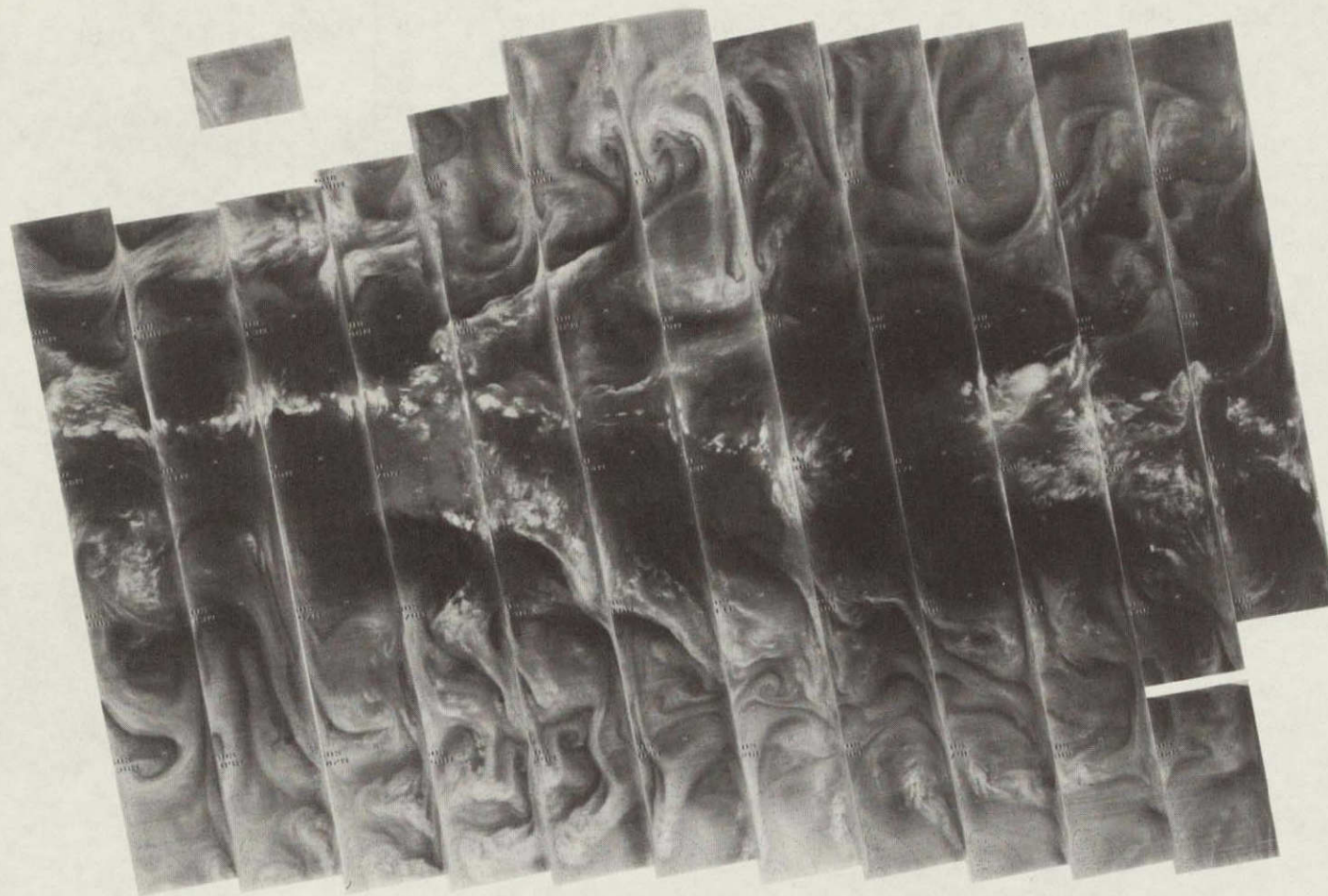


1926 1925 1924 1923 1922 1921 1920 1919 1918 1917 1916 1915 1914

2 NOVEMBER 1975

11.5 μm

4-133

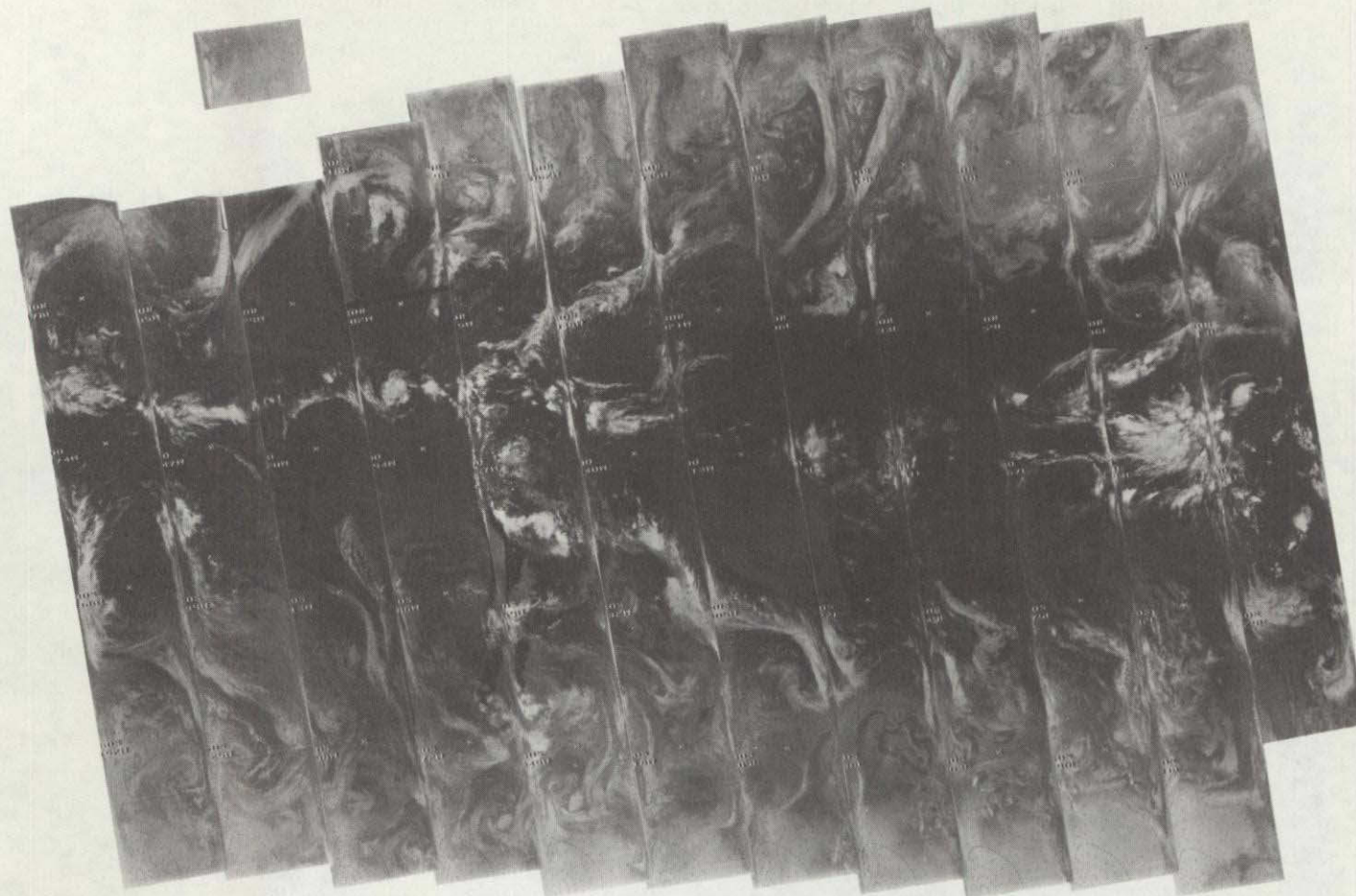


1926 1925 1924 1923 1922 1921 1920 1919 1918 1917 1916 1915 1914

2 NOVEMBER 1975

6.7 μm

4-134

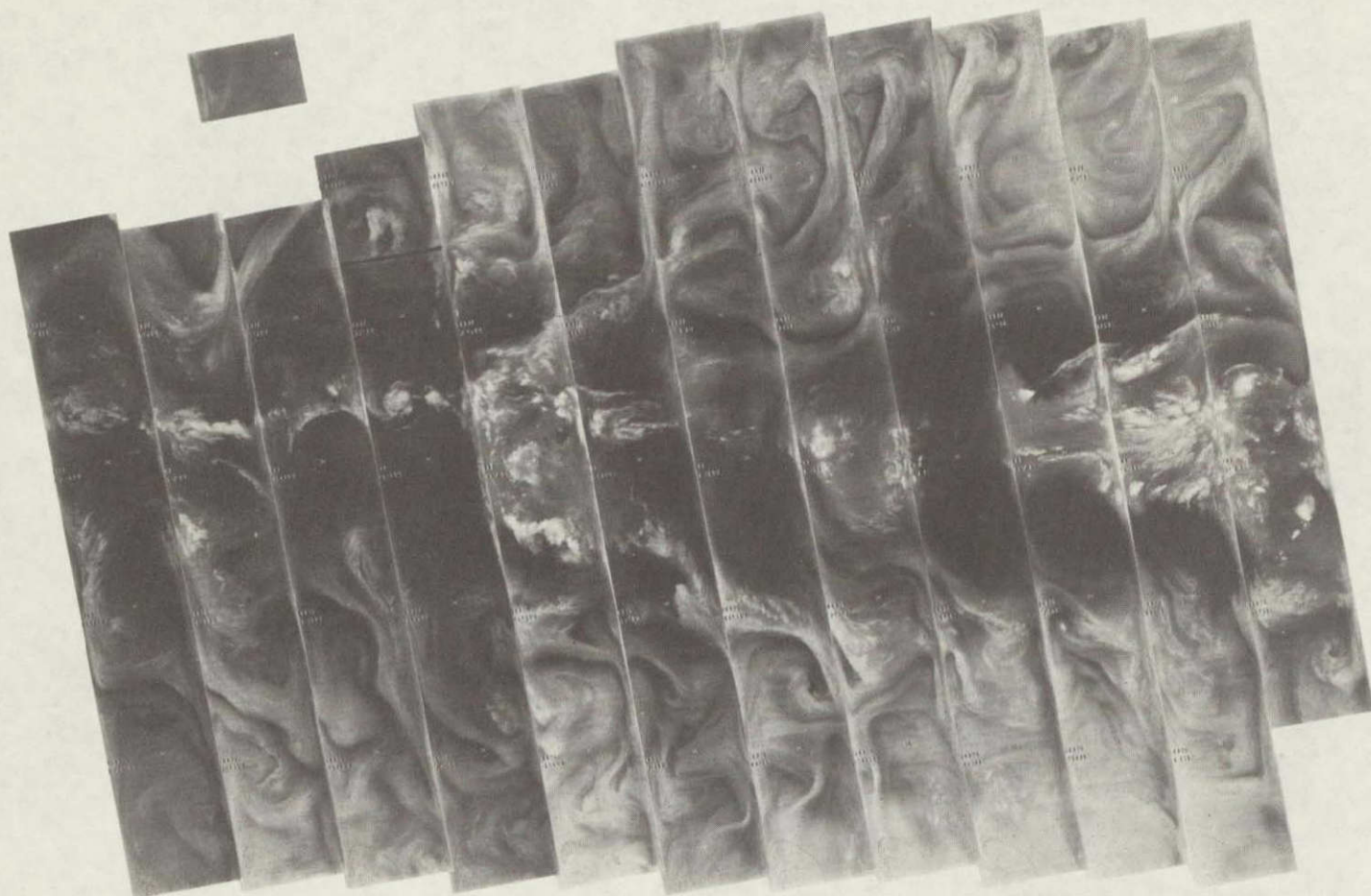


1940 1939 1938 1937 1936 1935 1934 1933 1932 1931 1930 1929 1928 1927

3 NOVEMBER 1975

11.5 μm

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1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940

3 NOVEMBER 1975

6.7 μm

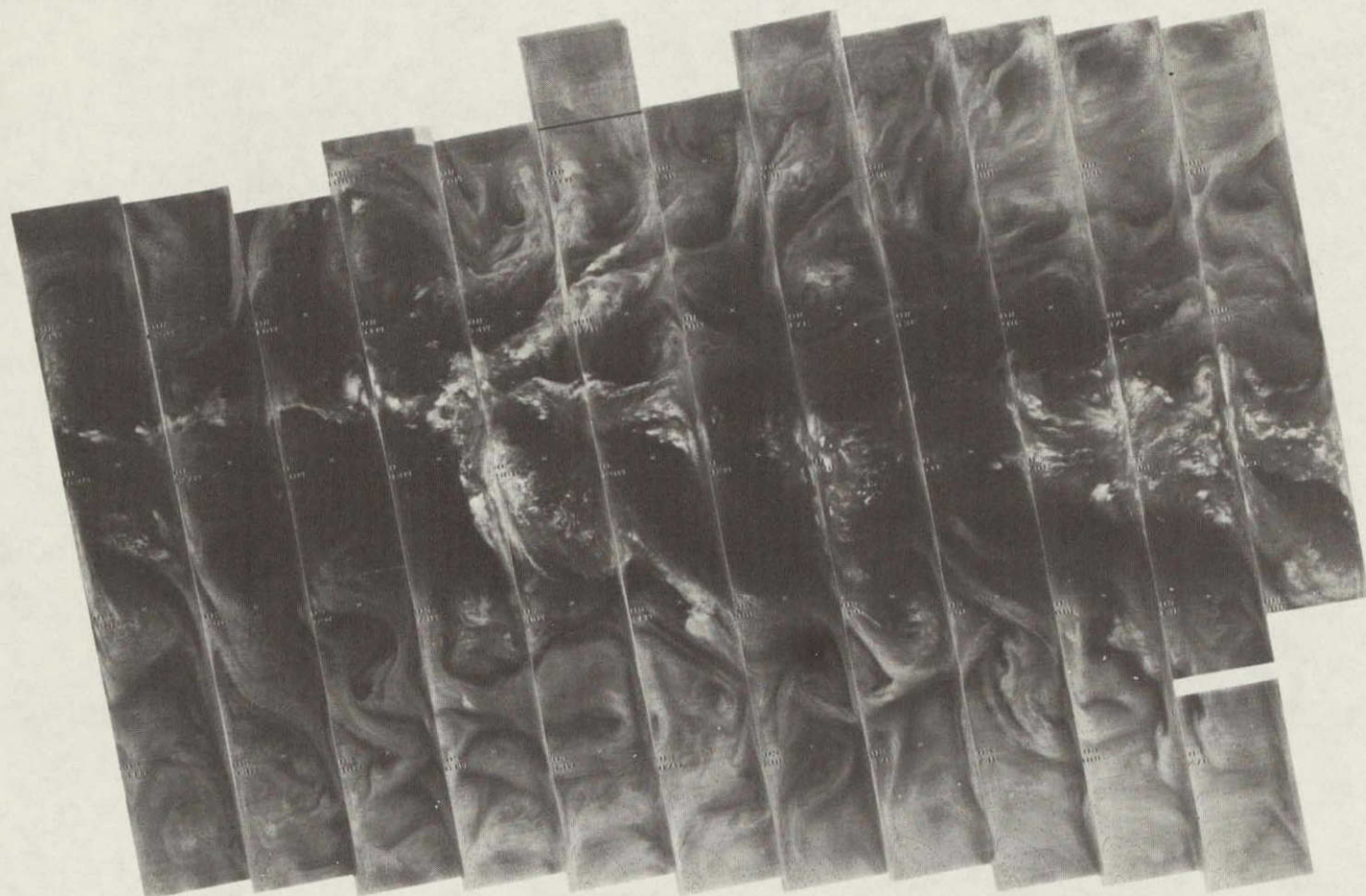
4-135

1

11.5 μm

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4-137



1953 1952 1951 1950 1949 1948 1947 1946 1945 1944 1943 1942 1941

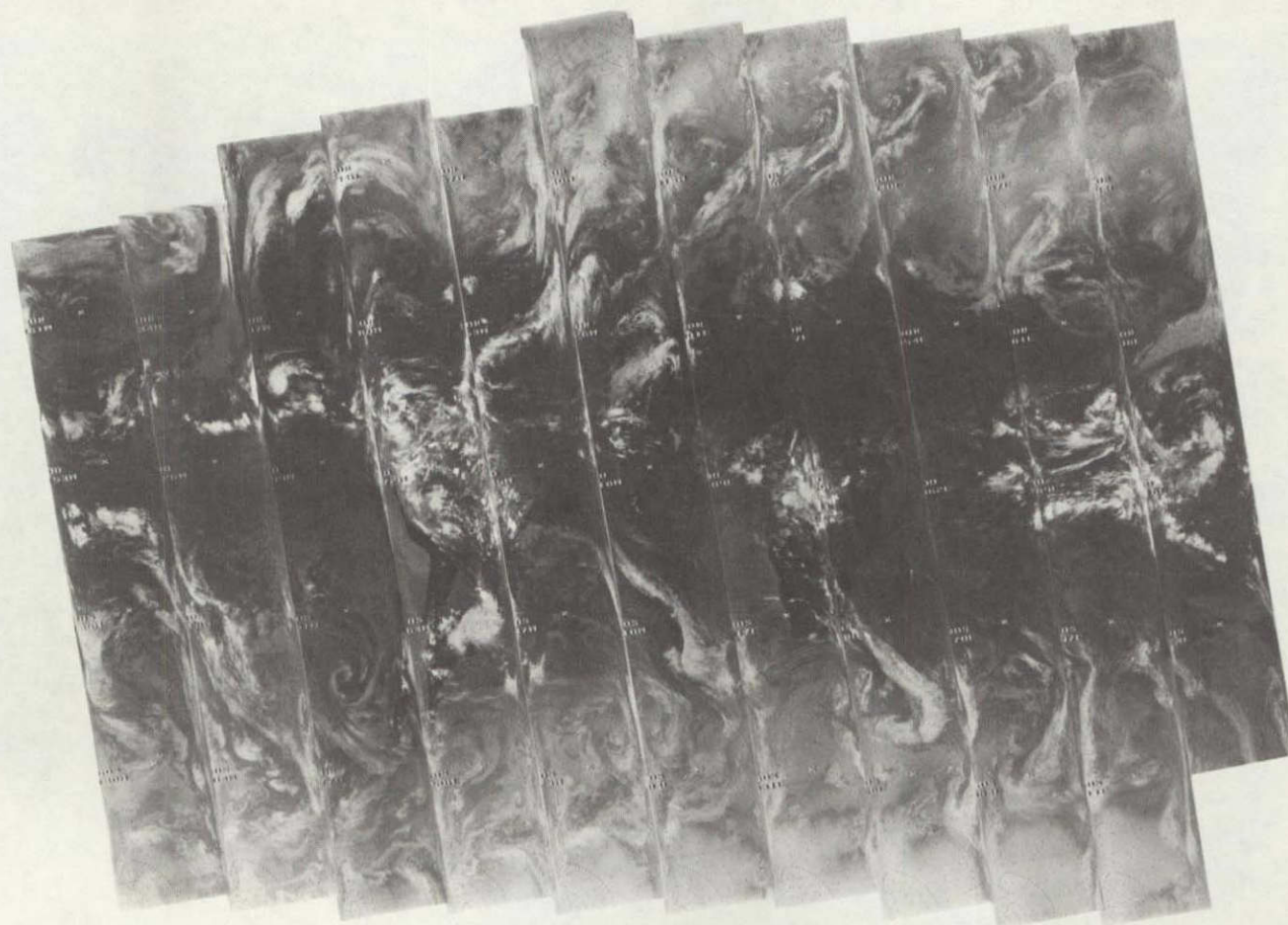
4 NOVEMBER 1975

6.7 μm

4-138

+

+

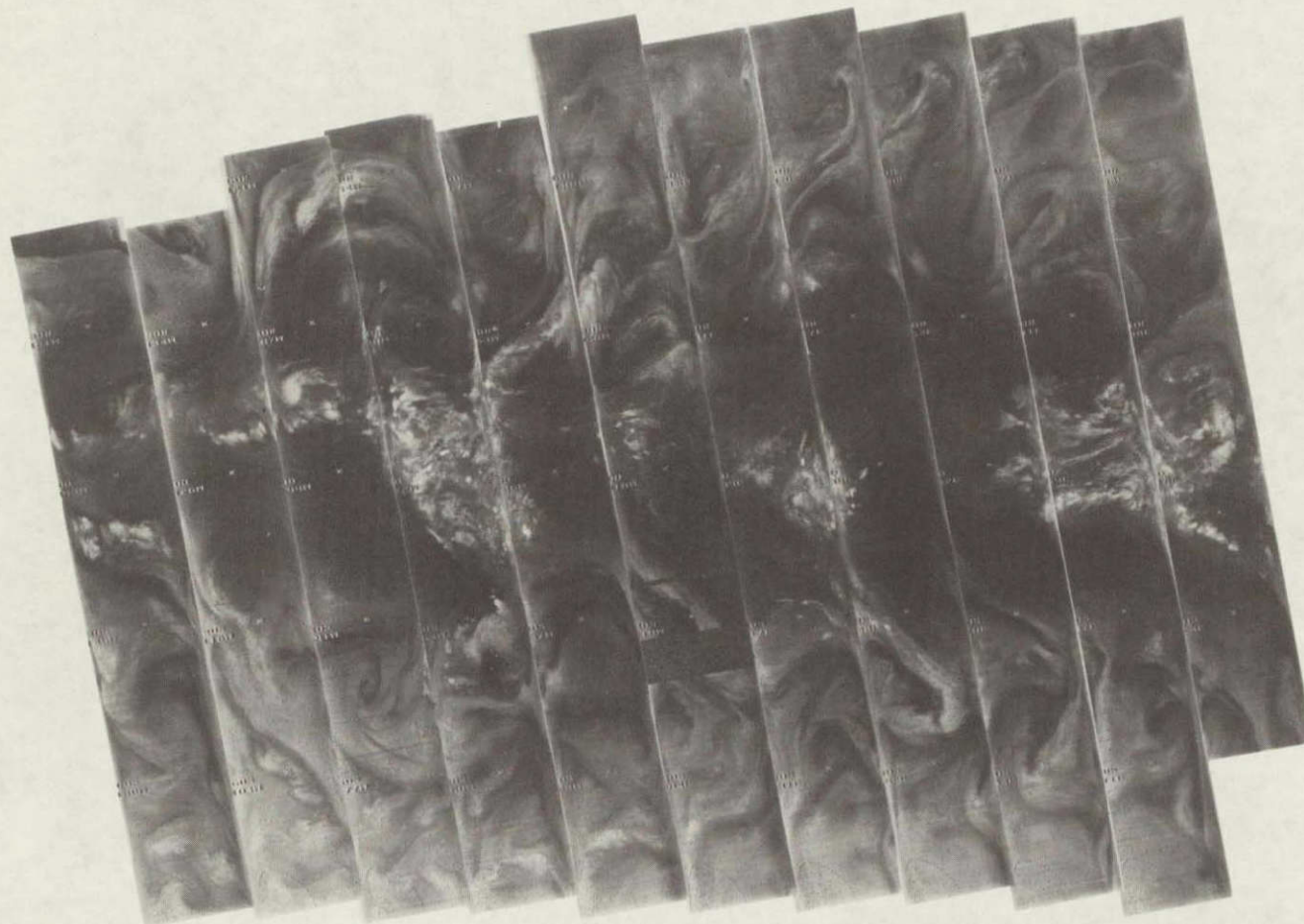


1967 1966 1965 1964 1963 1962 1961 1960 1959 1958 1957 1956 1955 1954

5 NOVEMBER 1975

11.5 μm

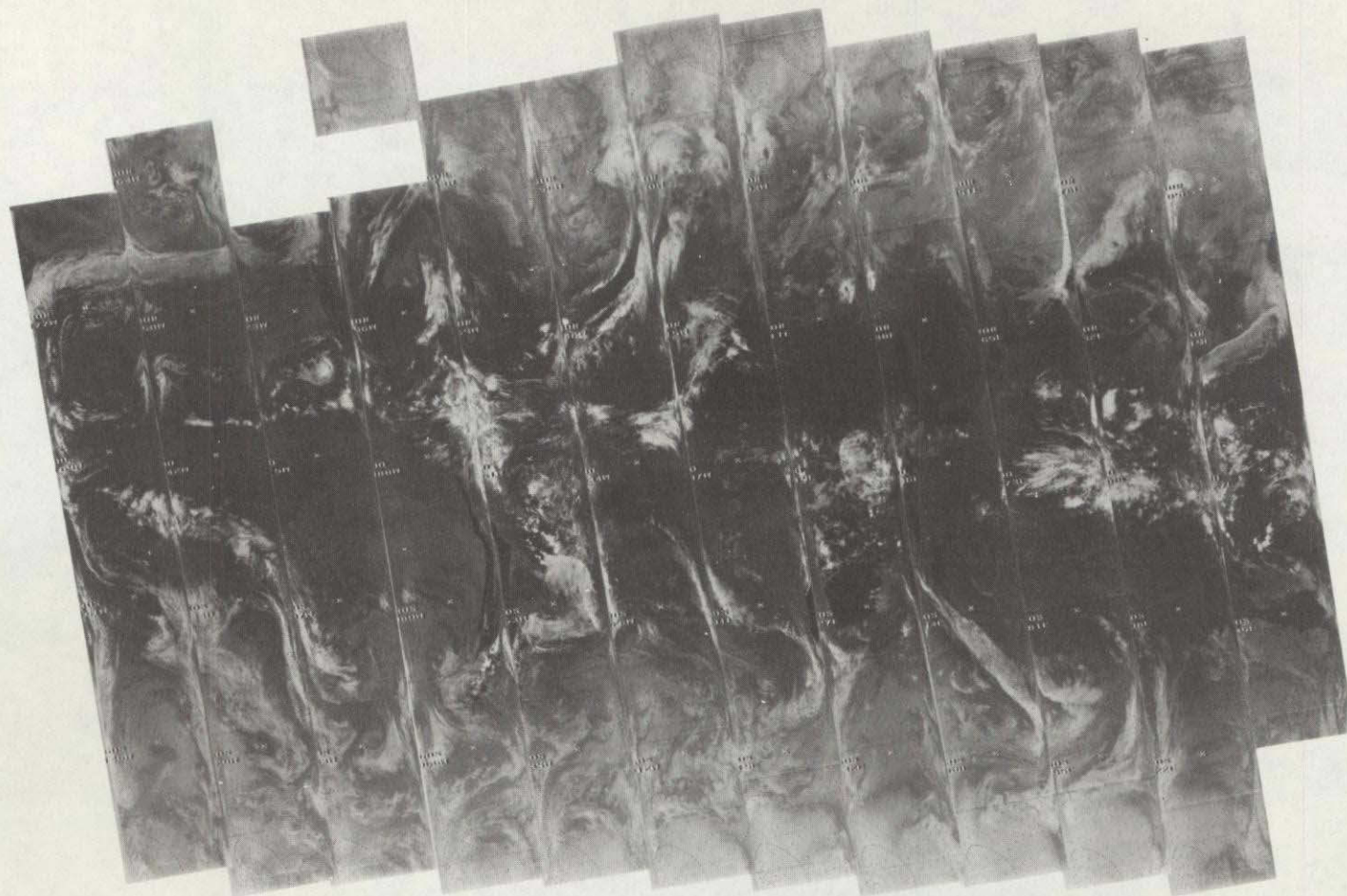
4-1 ORIGINAL PAGE IS
OF POOR QUALITY



1967 1966 1965 1964 1963 1962 1961 1960 1959 1958 1957 1956 1955 1954

5 NOVEMBER 1975

6.7 μm

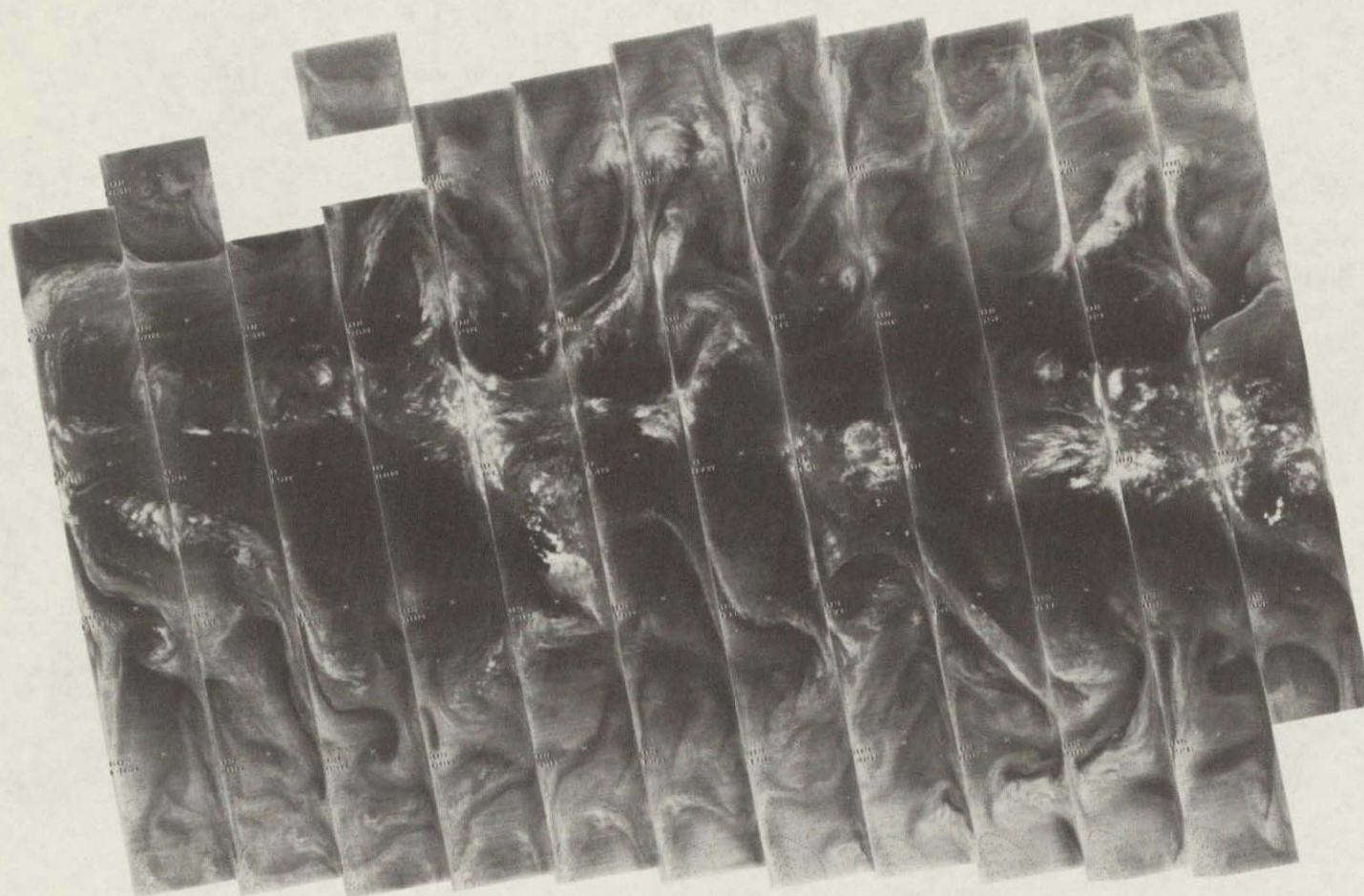


1980 1979 1978 1977 1976 1975 1974 1973 1972 1971 1970 1969 1968

6 NOVEMBER 1975

11.5 μm

4-140



1980 1979 1978 1977 1976 1975 1974 1973 1972 1971 1970 1969 1968

6 NOVEMBER 1975

6.7 μm

ORIGINAL PAGE IS
OF POOR QUALITY
4-141

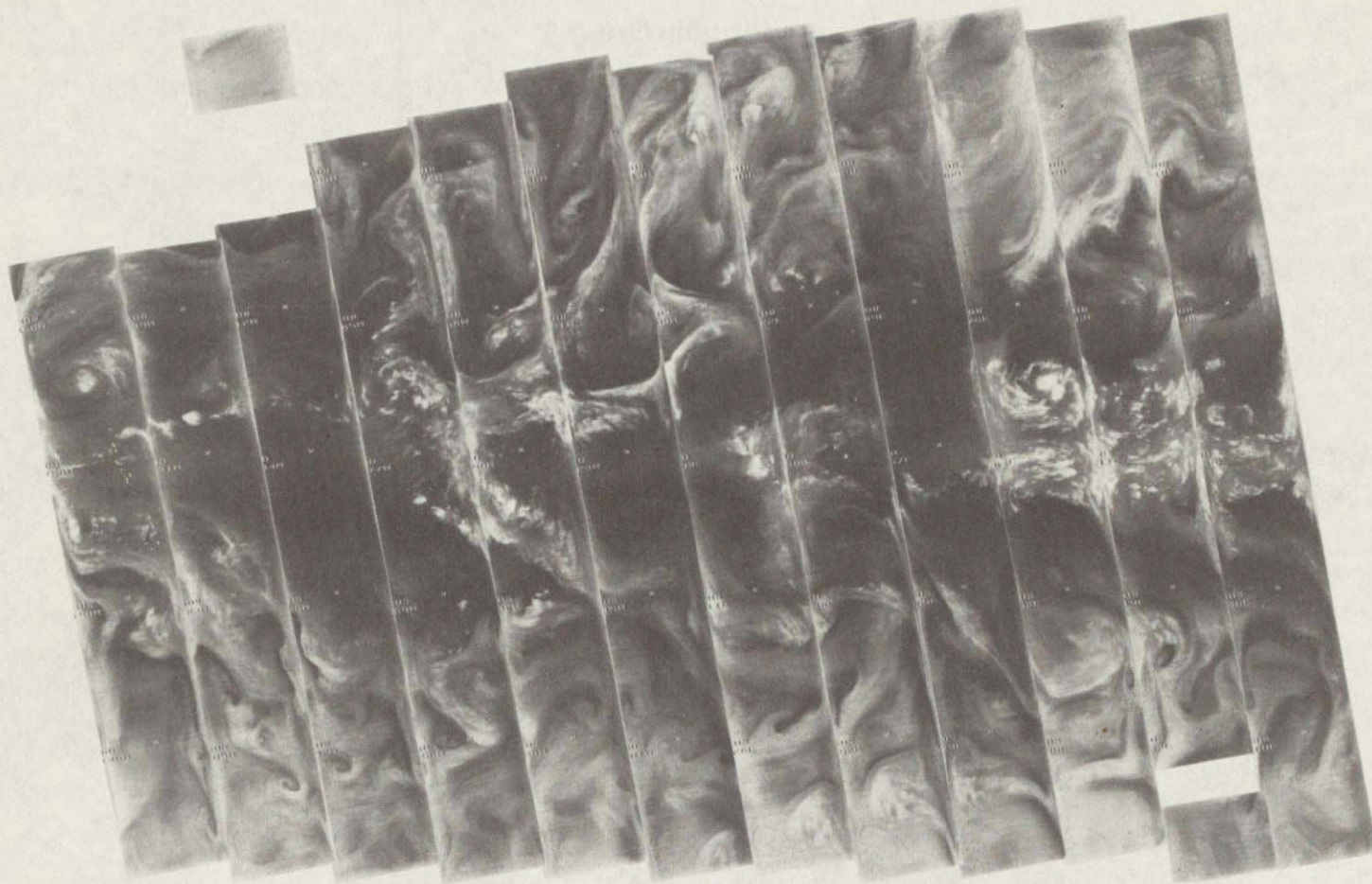
4-142



1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981

7 NOVEMBER 1975

11.5 μm



1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981

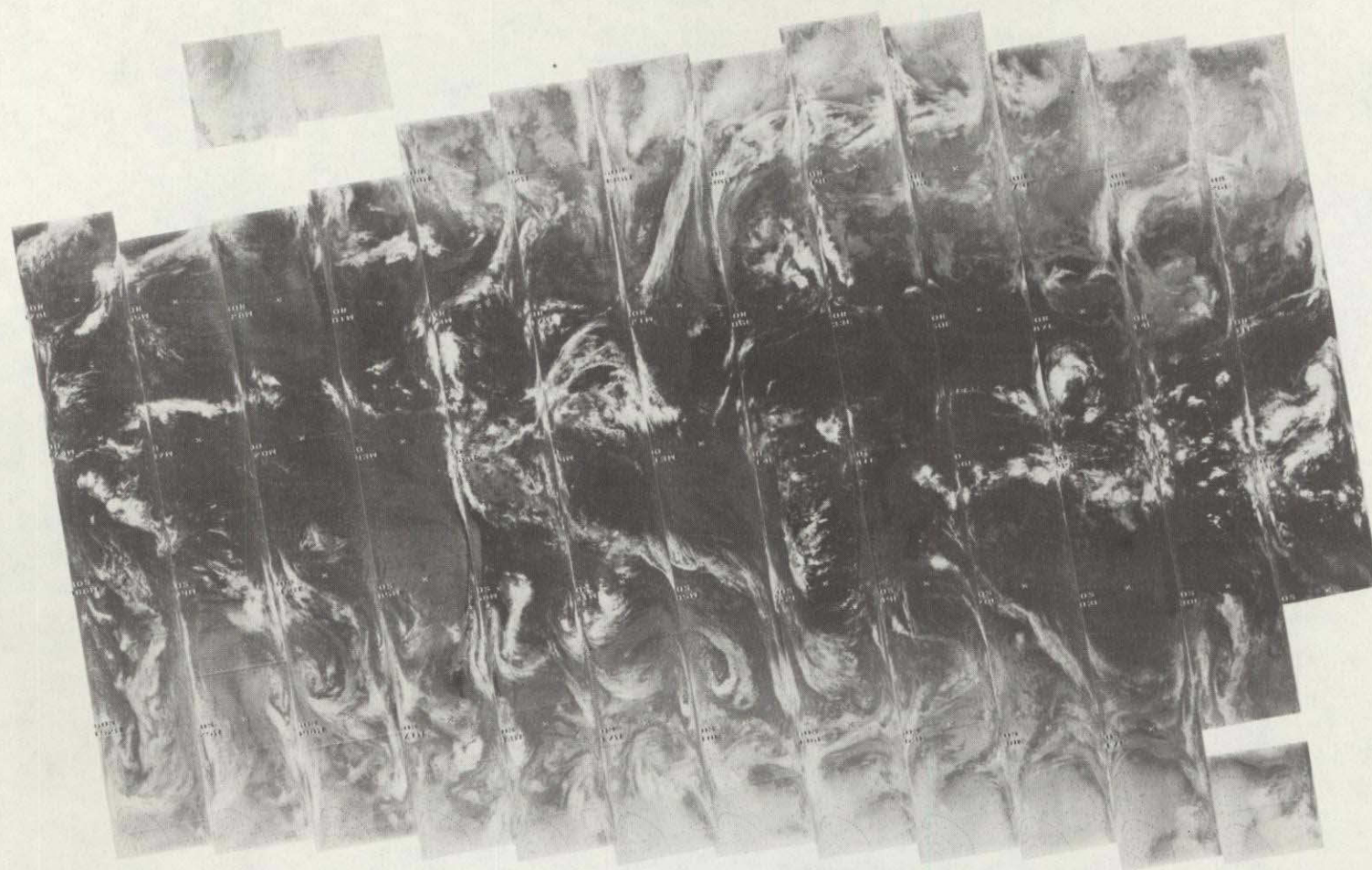
7 NOVEMBER 1975

6.7 μm

4-143

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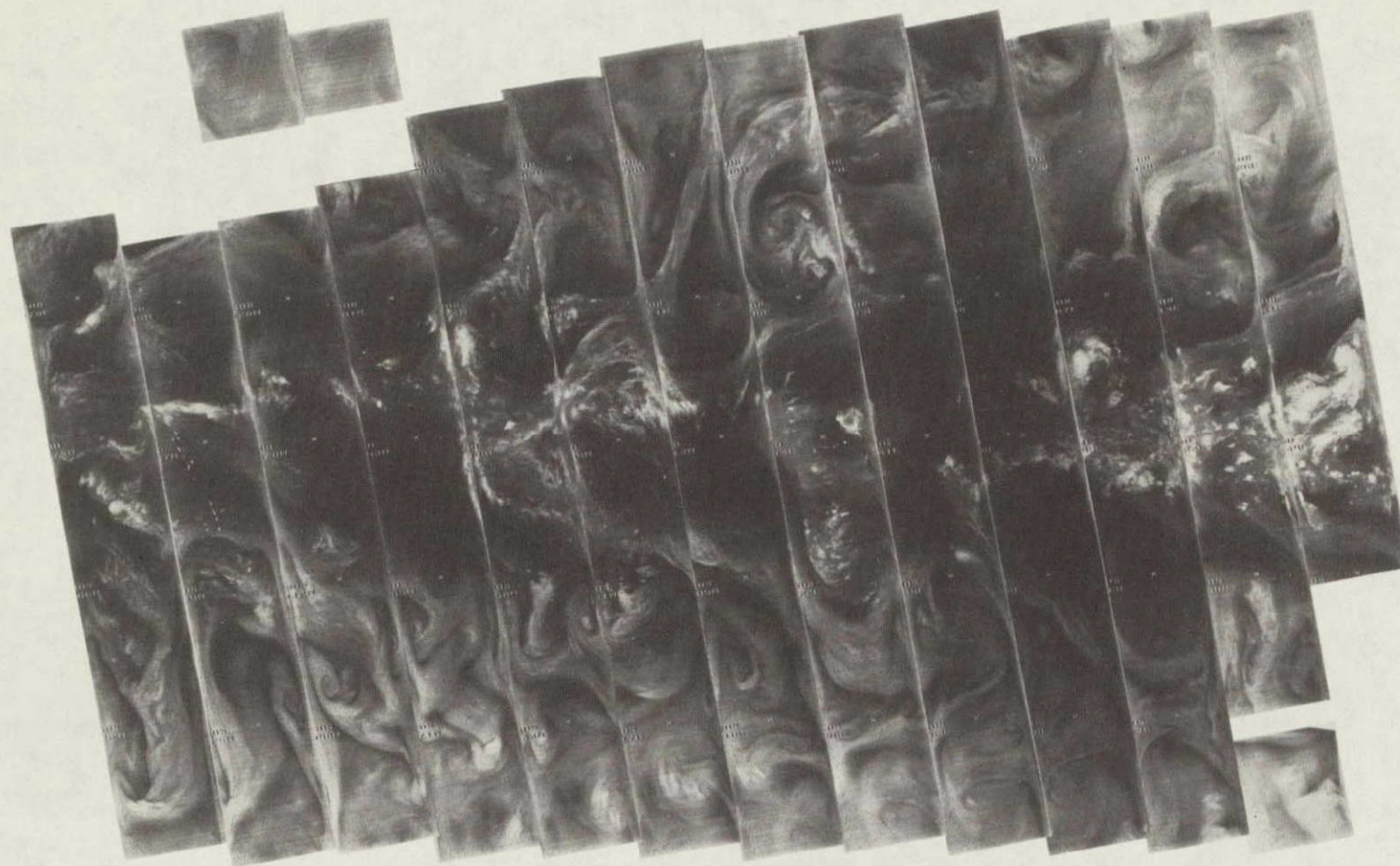
4-144



2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994

8 NOVEMBER 1975

11.5 μm



2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994

8 NOVEMBER 1975

6.7 μm

ORIGINAL PAGE IS
OF POOR QUALITY
4-145

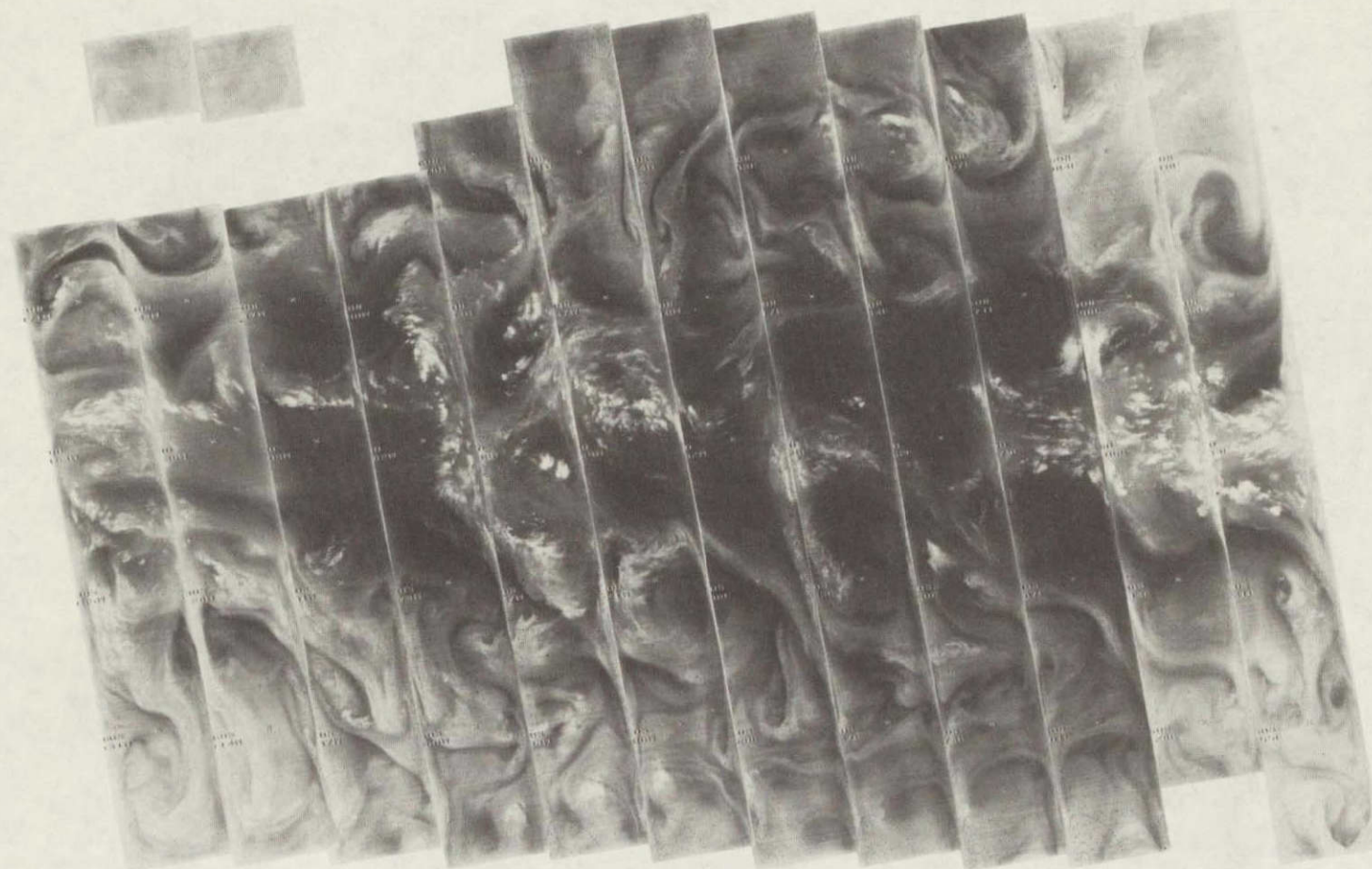
4-146



2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009 2008

9 NOVEMBER 1975

11.5 μm



2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009 2008

9 NOVEMBER 1975

6.7 μm

4-147

ORIGINAL PAGE IS
OF POOR QUALITY

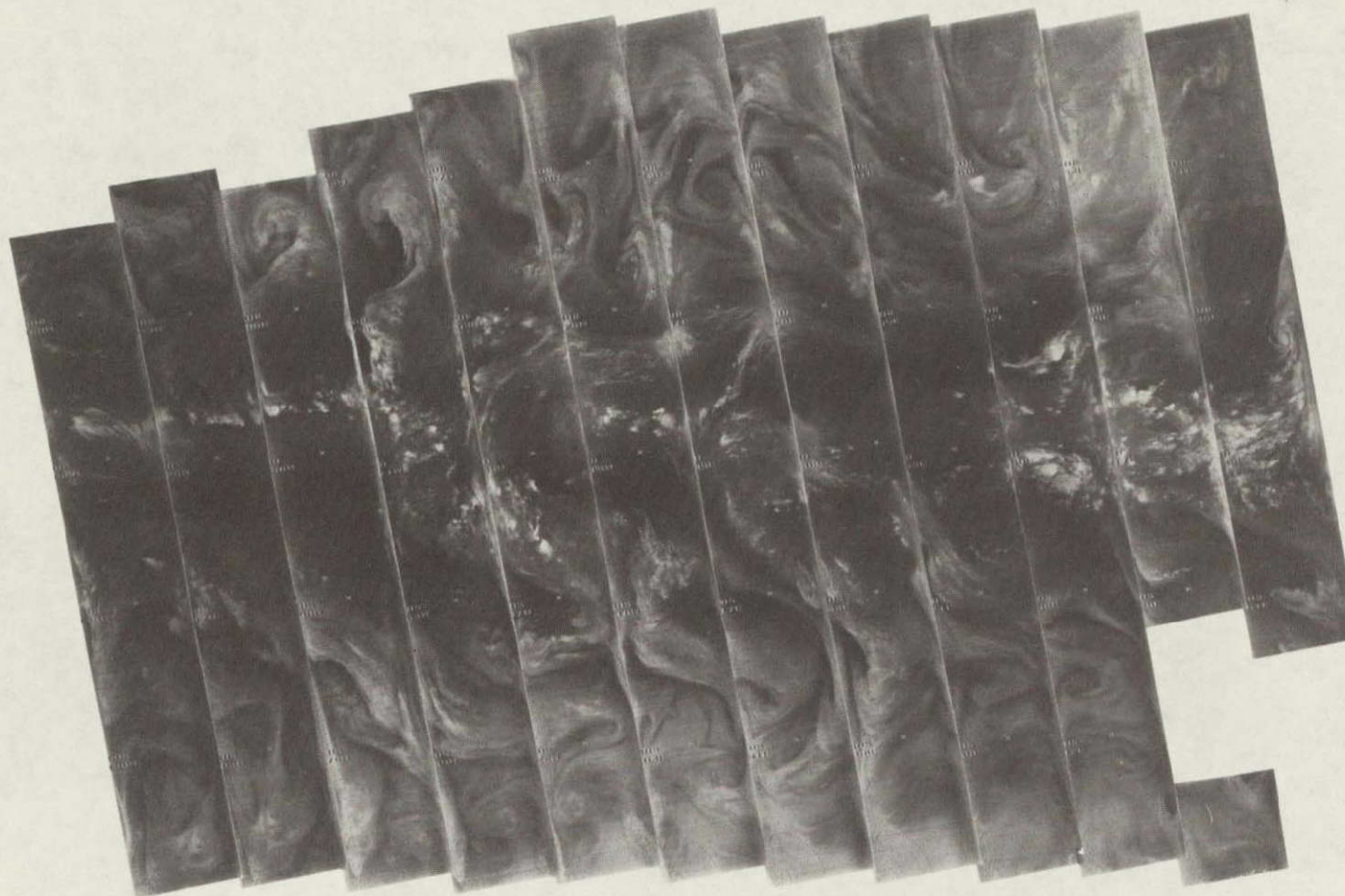
4-148



2034 2033 2032 2031 2030 2029 2028 2027 2026 2025 2024 2023 2022 2021

10 NOVEMBER 1975

11.5 μm



2034 2033 2032 2031 2030 2029 2028 2027 2026 2025 2024 2023 2022 2021

10 NOVEMBER 1975

6.7 μm

4-149

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OF POOR QUALITY

4-150



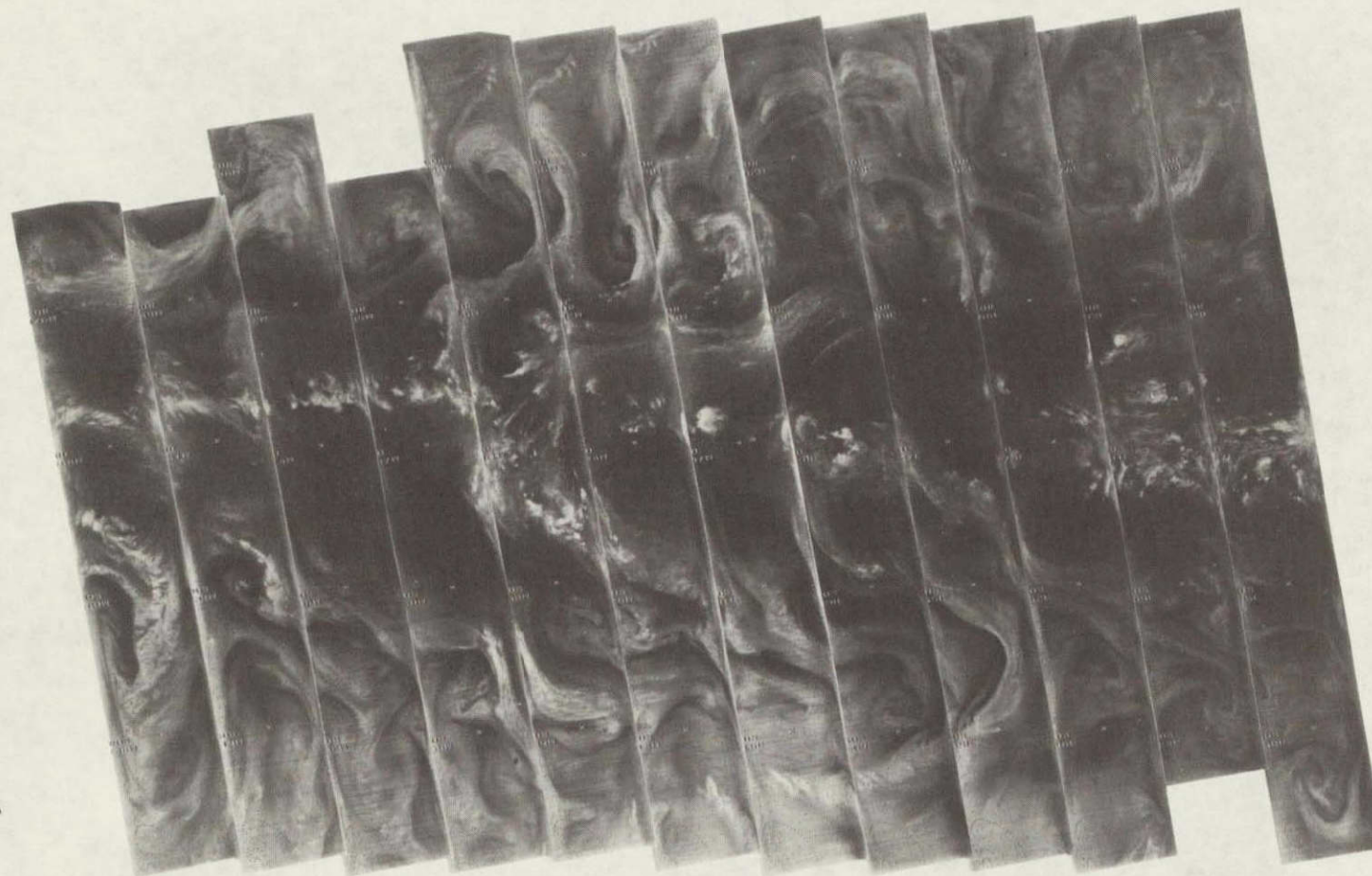
2047 2046 2045 2044 2043 2042 2041 2040 2039 2038 2037 2036 2035

11 NOVEMBER 1975

11.5 μm

4-151

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OF POOR QUALITY



2047 2046 2045 2044 2043 2042 2041 2040 2039 2038 2037 2036 2035

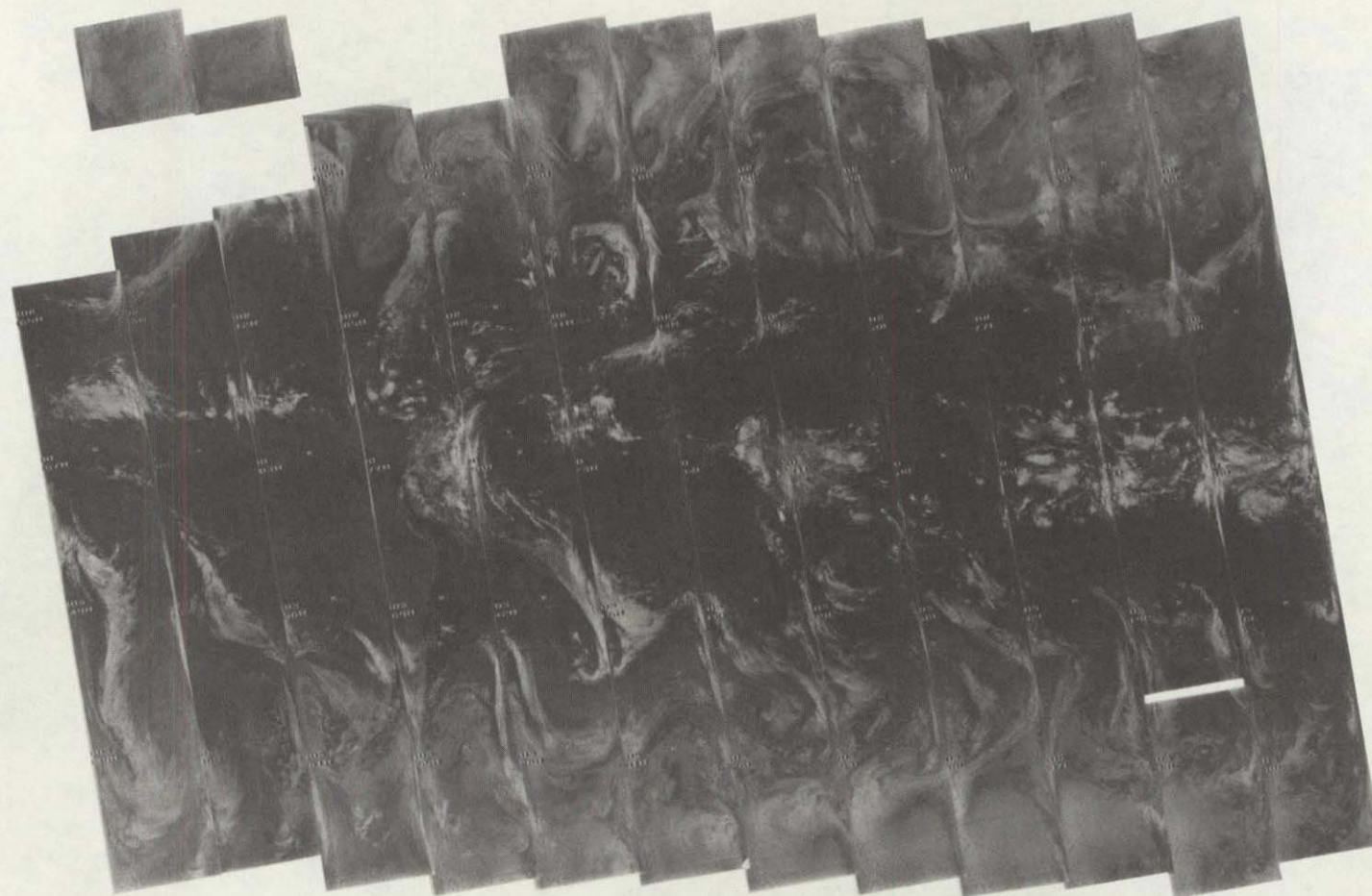
11 NOVEMBER 1975

6.7 μm

4-152

L

T



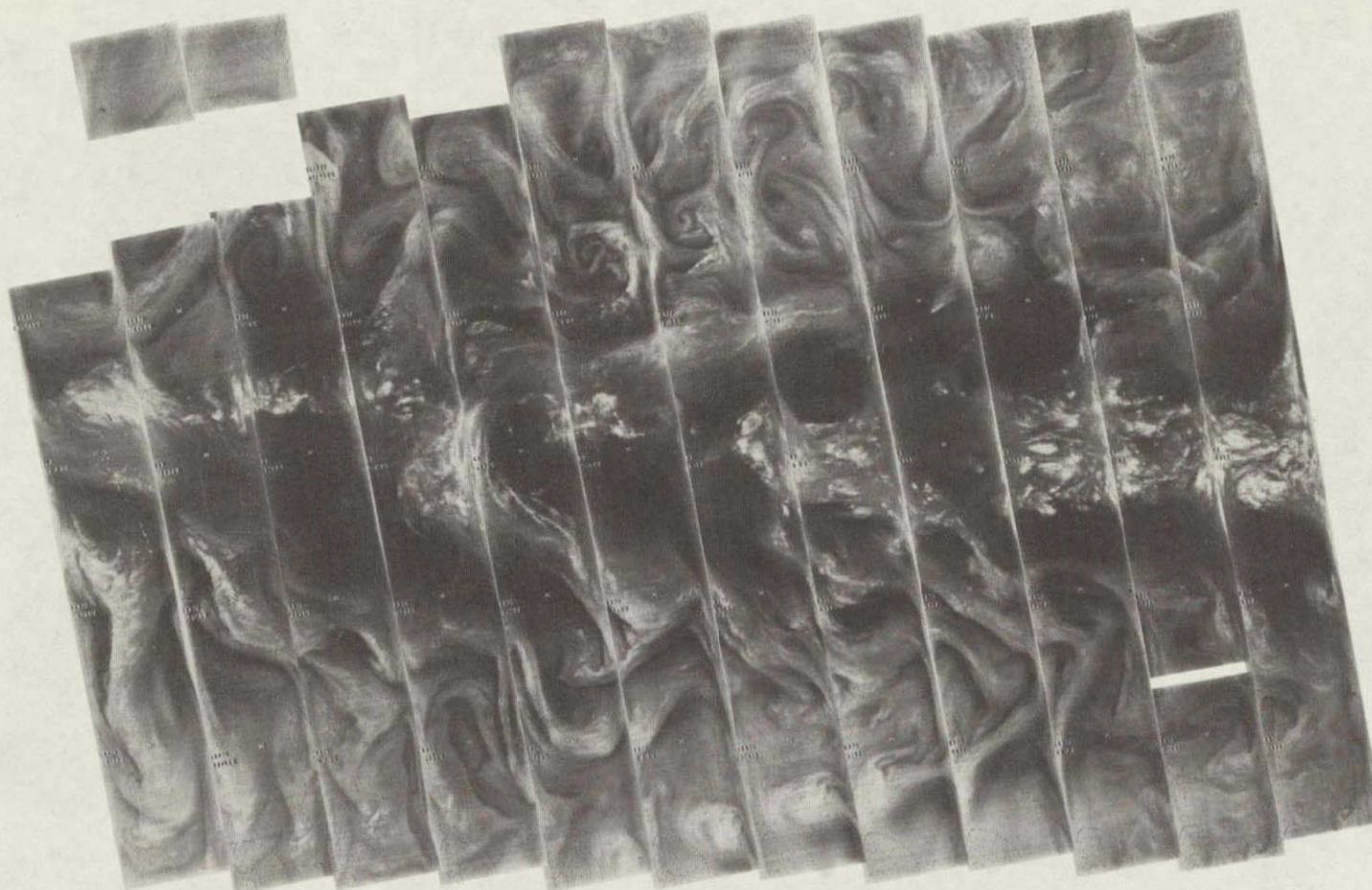
2060 2059 2058 2057 2056 2055 2054 2053 2052 2051 2050 2049 2048

12 NOVEMBER 1975

11.5 μm

4-153

ORIGINAL PAGE IS
OF POOR QUALITY



2060 2059 2058 2057 2056 2055 2054 2053 2052 2051 2050 2049 2048

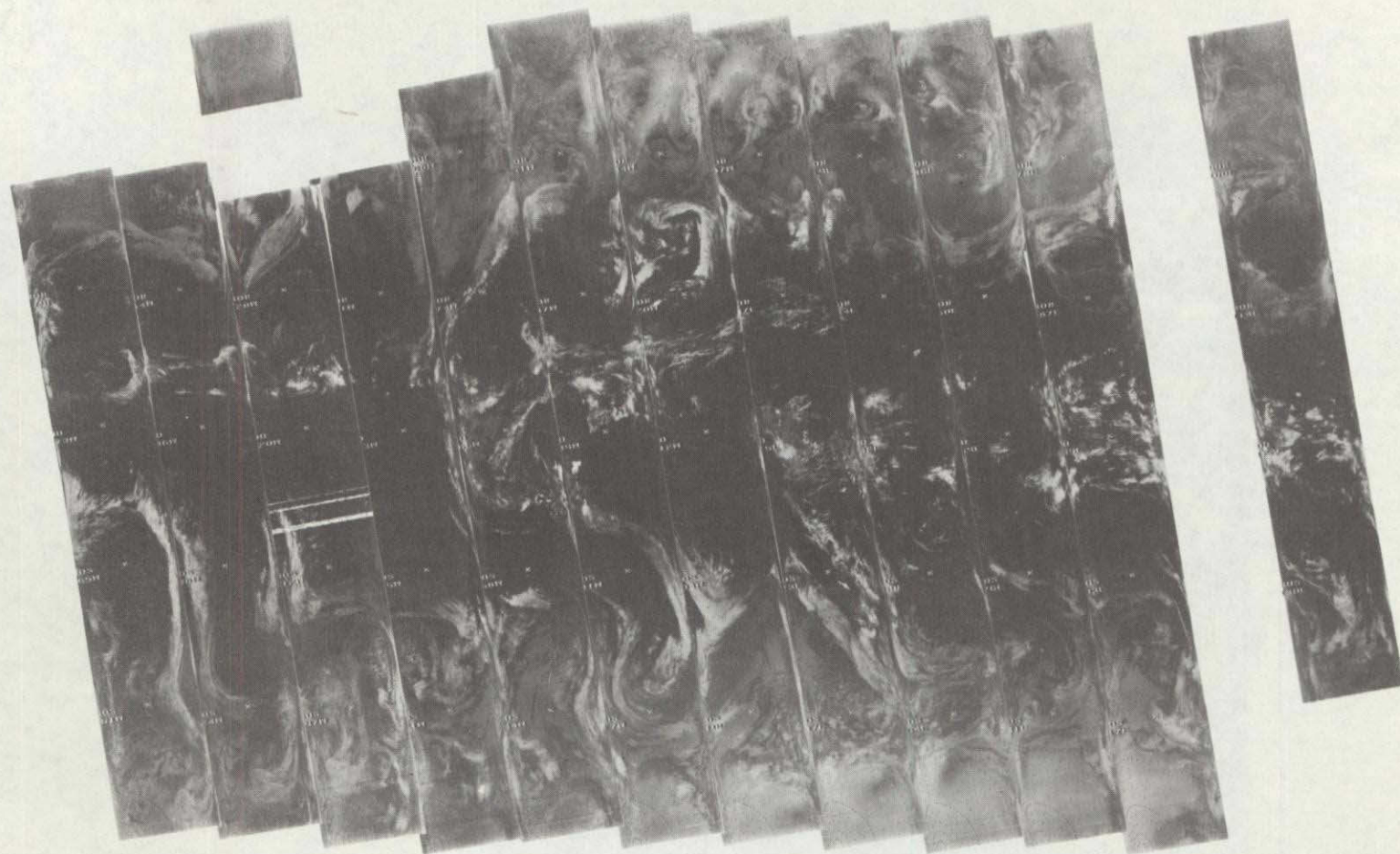
12 NOVEMBER 1975

6.7 μm

4-154

T

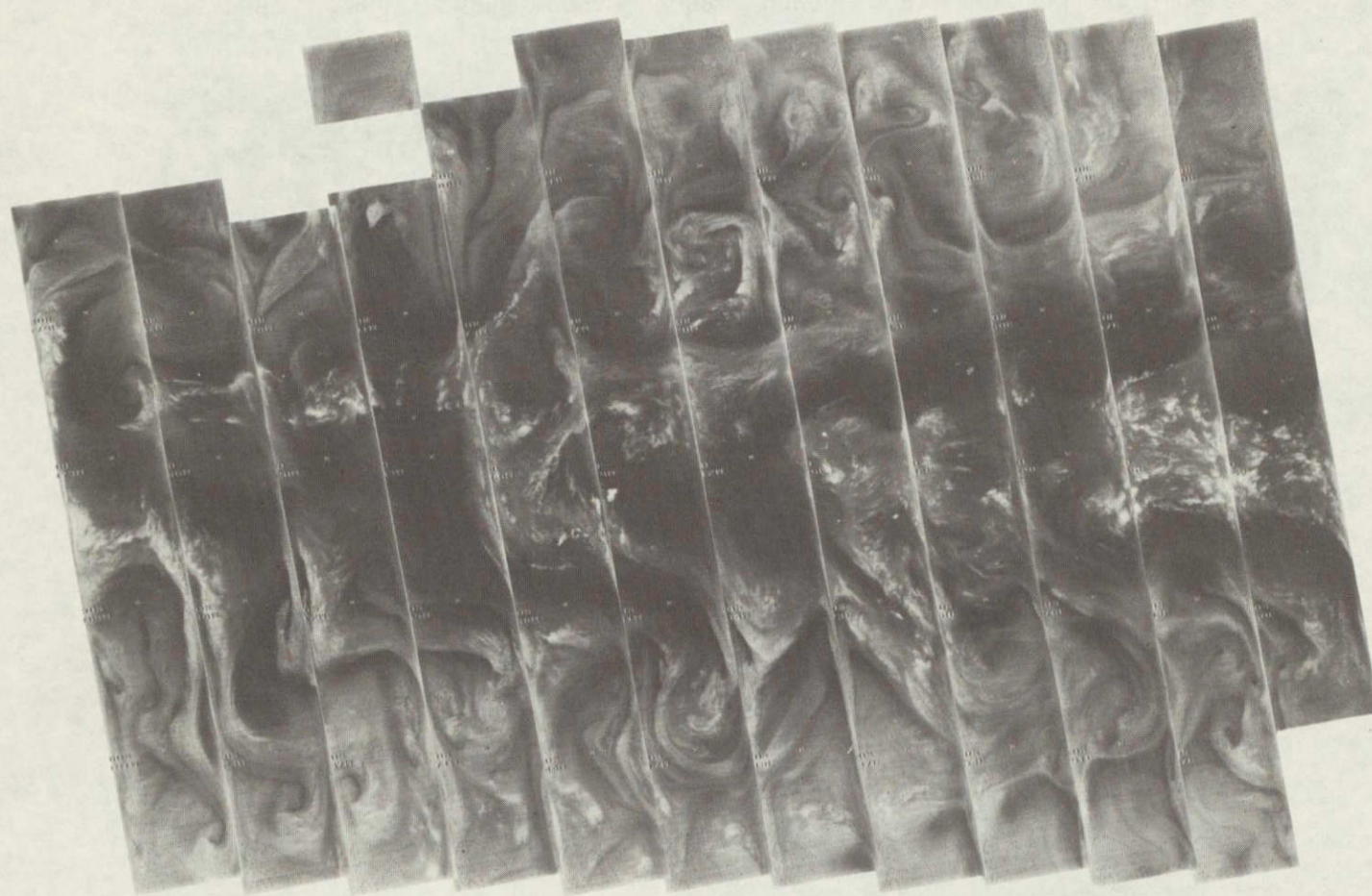
T



2074 2073 2072 2071 2070 2069 2068 2067 2066 2065 2064 2063 2062 2061

13 NOVEMBER 1975

11.5 μm



4-155

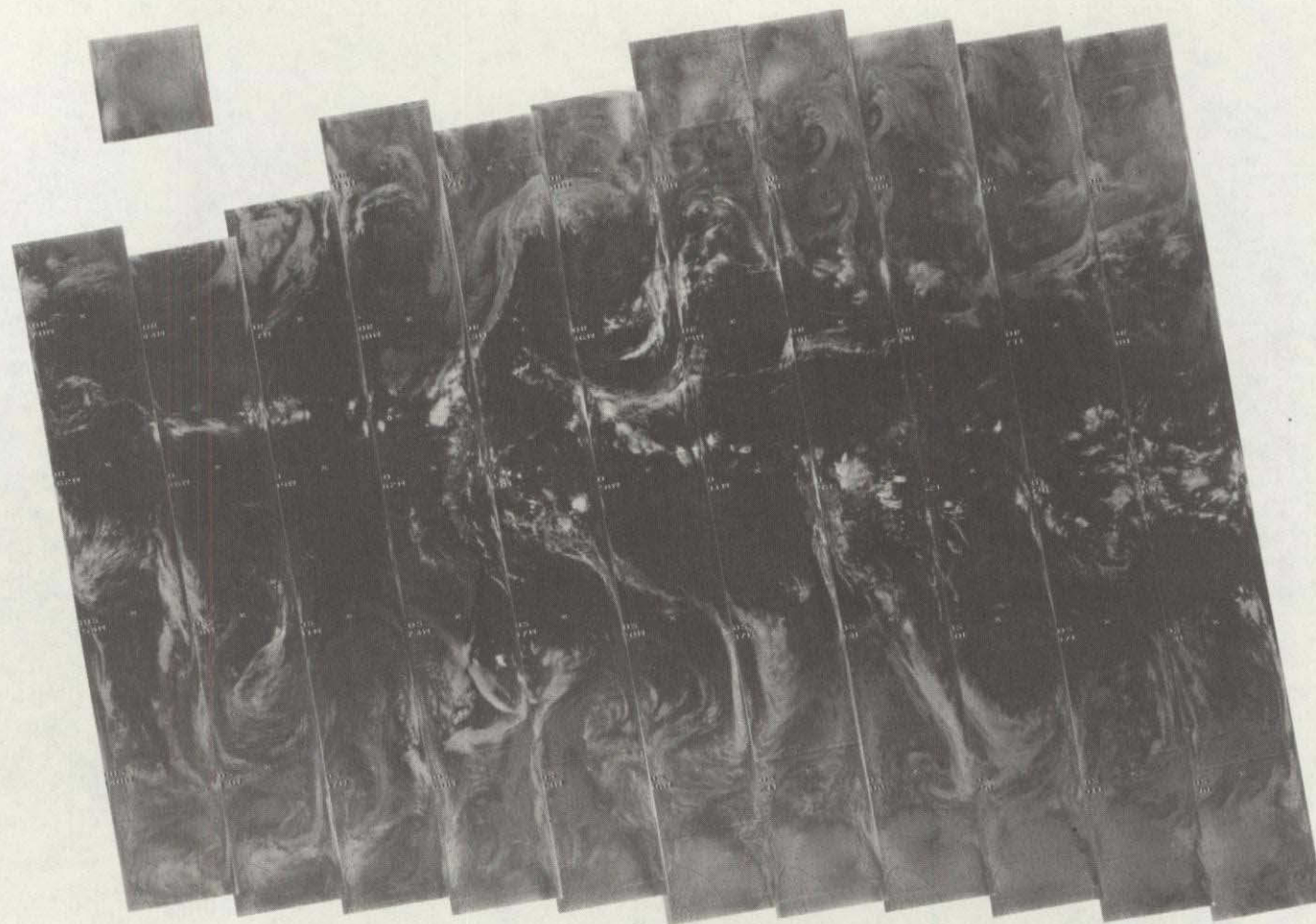
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2074 2073 2072 2071 2070 2069 2068 2067 2066 2065 2064 2063 2062 2061

13 NOVEMBER 1975

6.7 μ m

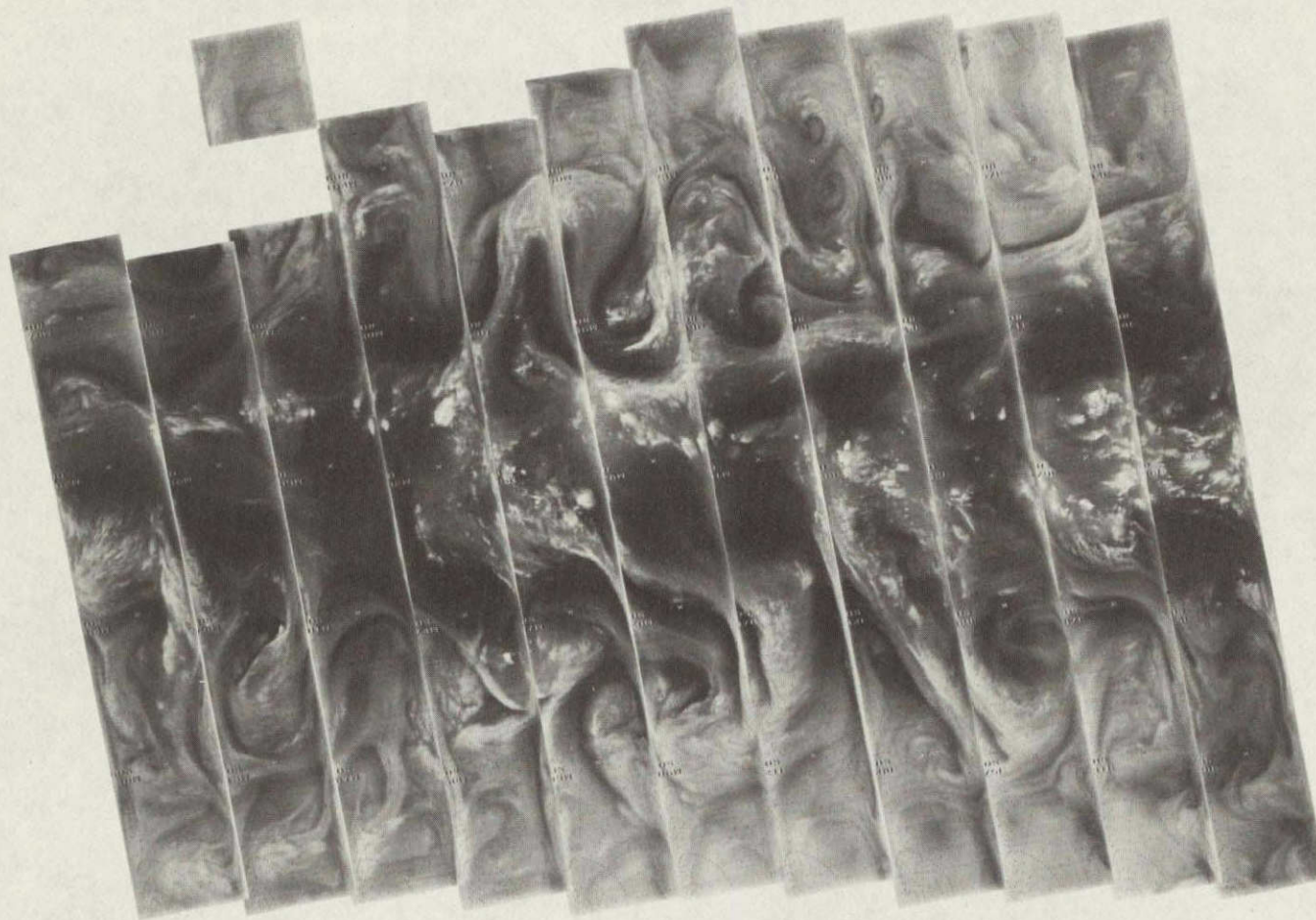
4-156



2087 2086 2085 2084 2083 2082 2081 2080 2079 2078 2077 2076 2075

14 NOVEMBER 1975

11.5 μm



2087 2086 2085 2084 2083 2082 2081 2080 2079 2078 2077 2076 2075

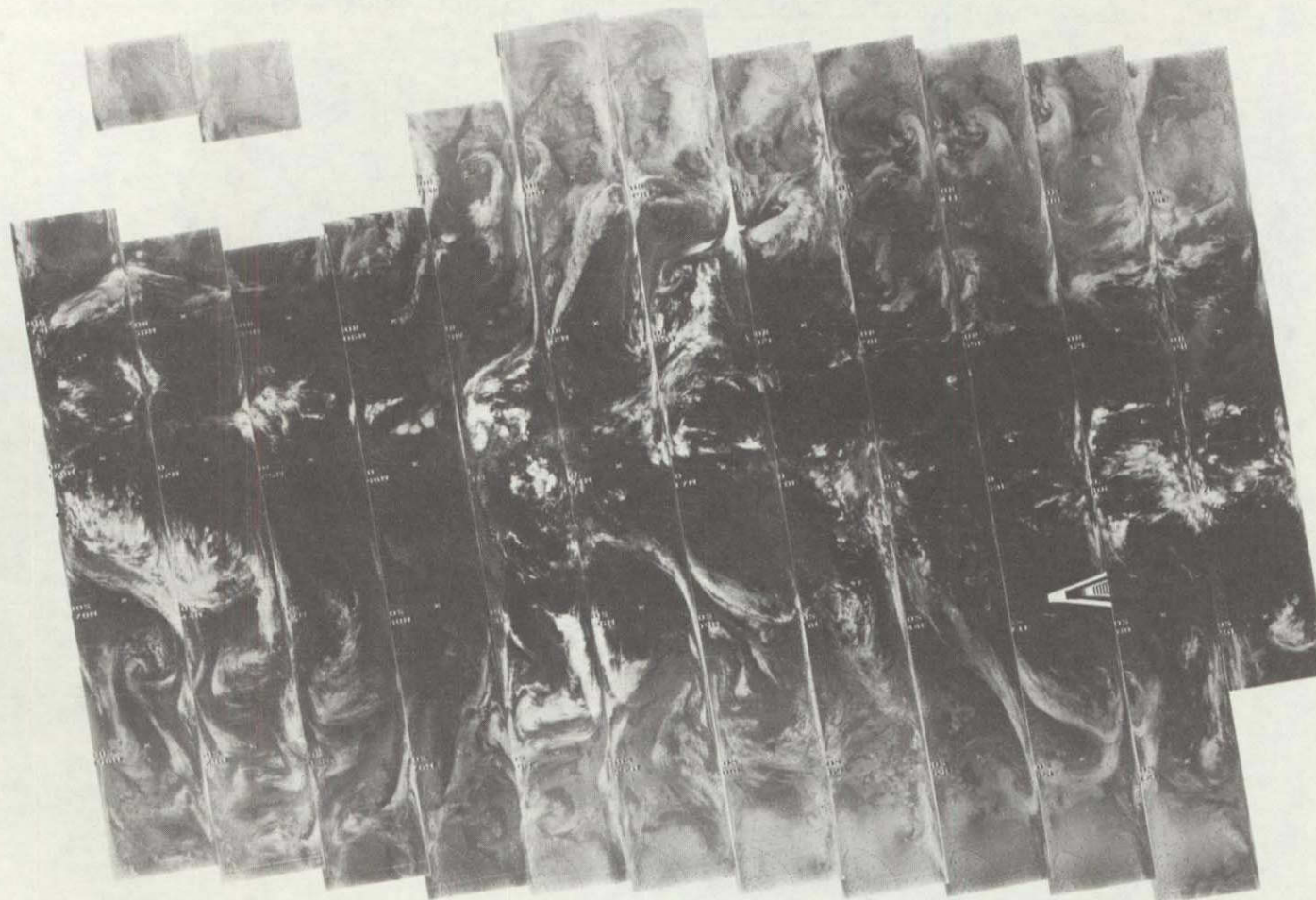
14 NOVEMBER 1975

6.7 μm

4-157

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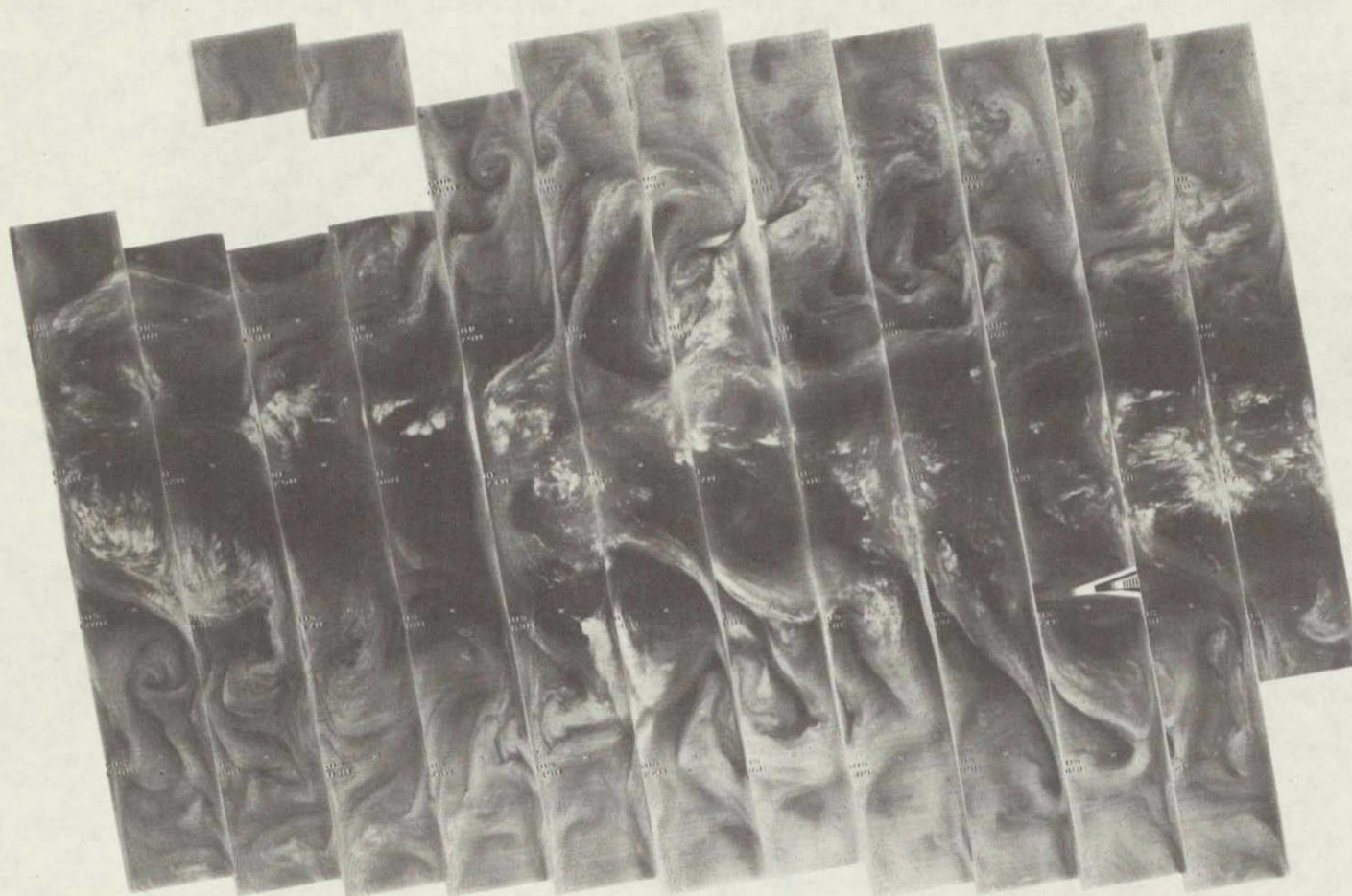
4-158



2102 2100 2099 2098 2097 2096 2095 2094 2093 2092 2091 2090 2089 2088

15 NOVEMBER 1975

11.5 μm



2101 2100 2099 2098 2097 2096 2095 2094 2093 2092 2091 2090 2089 2088

15 NOVEMBER 1975

6.7 μm

4-159

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OF POOR QUALITY

4-160

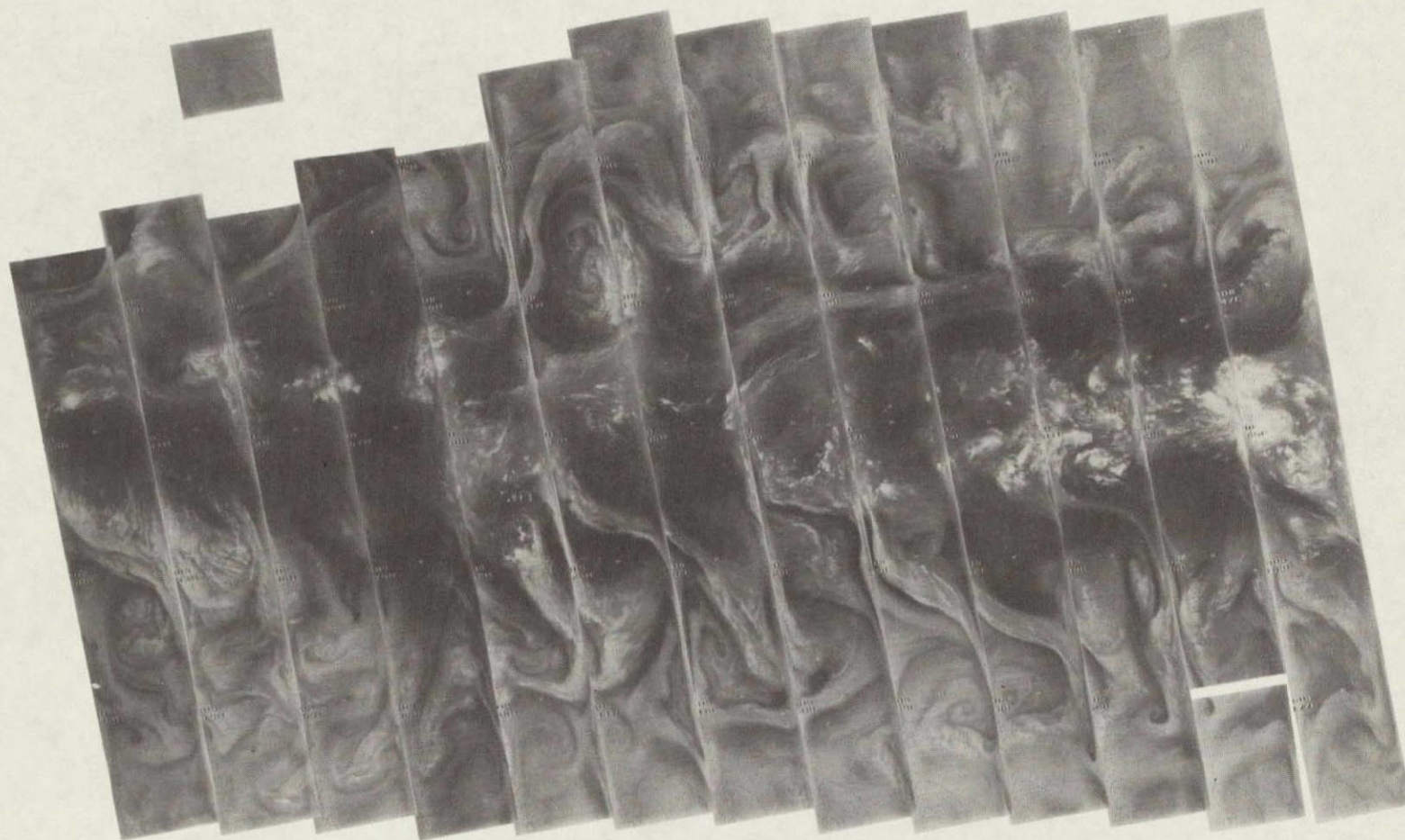
L

T



16 NOVEMBER 1975

11.5 μm



2114 2113 2112 2111 2110 2109 2108 2107 2106 2105 2104 2103 2102

16 NOVEMBER 1975

6.7 μm

4-161

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4-162

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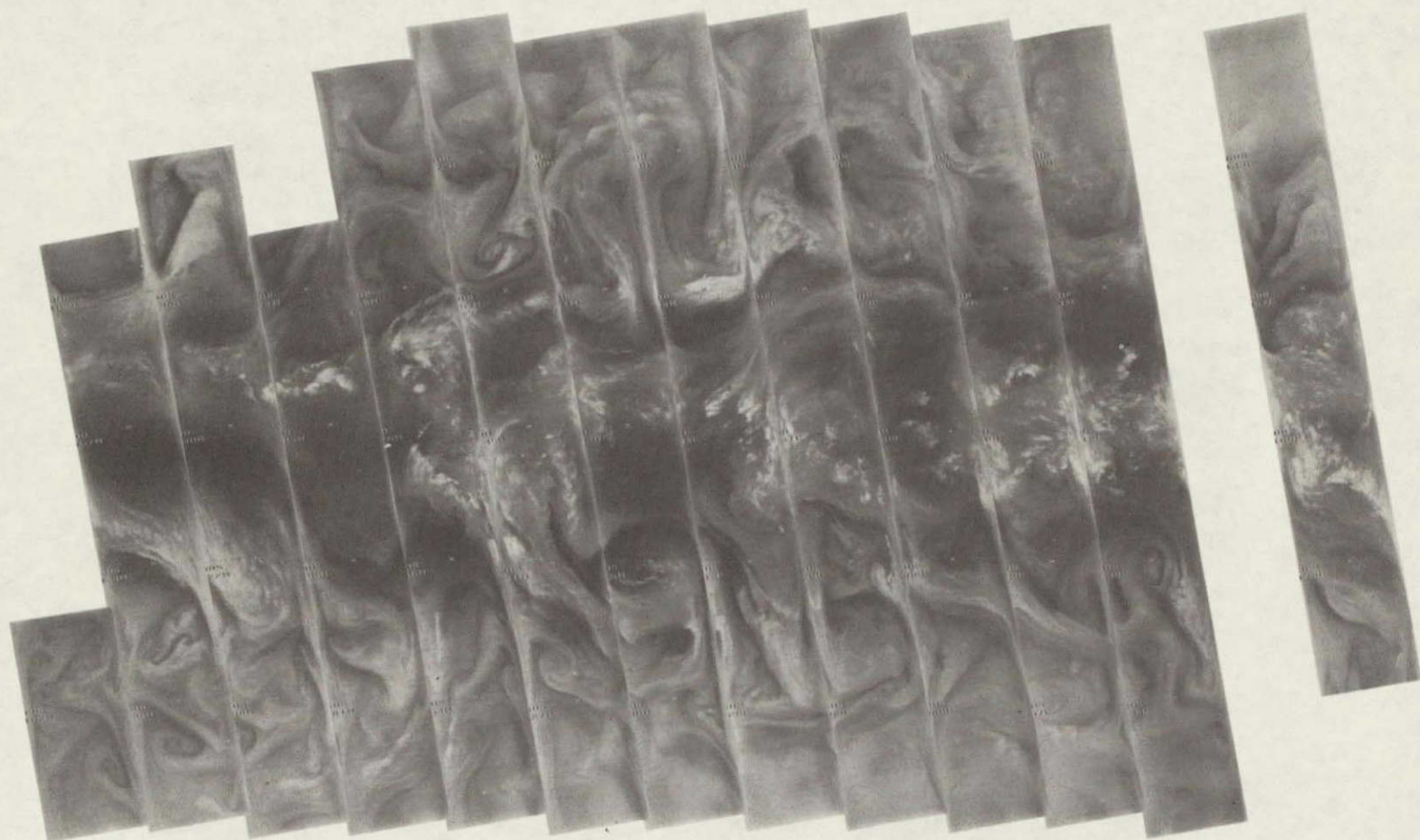
└

2128 2127 2126 2125 2124 2123 2122 2121 2120 2119 2118 2117 2116 2115

17 NOVEMBER 1975

11.5 μ m

4-163



2128 2127 2126 2125 2124 2123 2122 2121 2120 2119 2118 2117 2116 2115

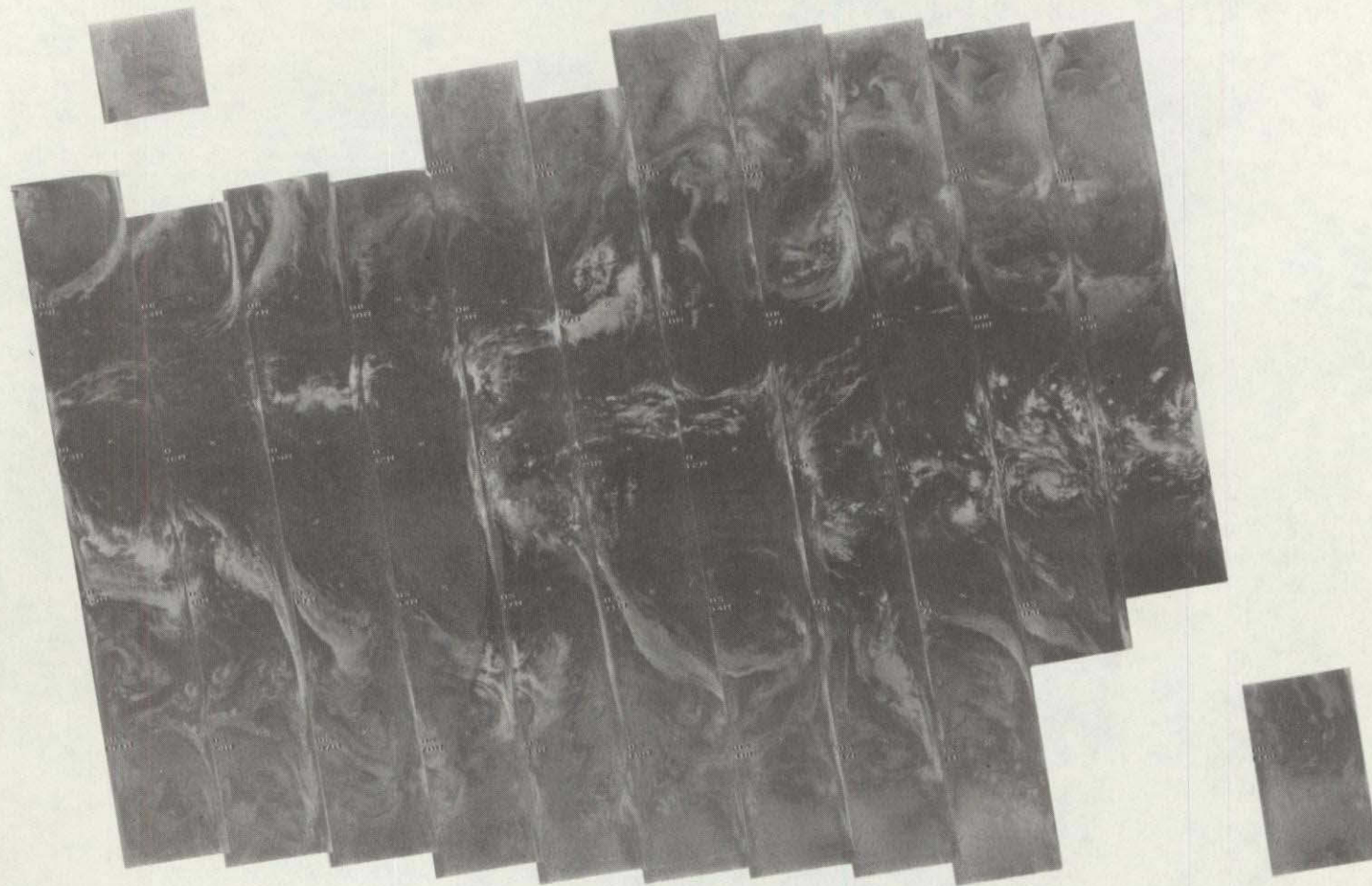
17 NOVEMBER 1975

6.7 μm

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4-164

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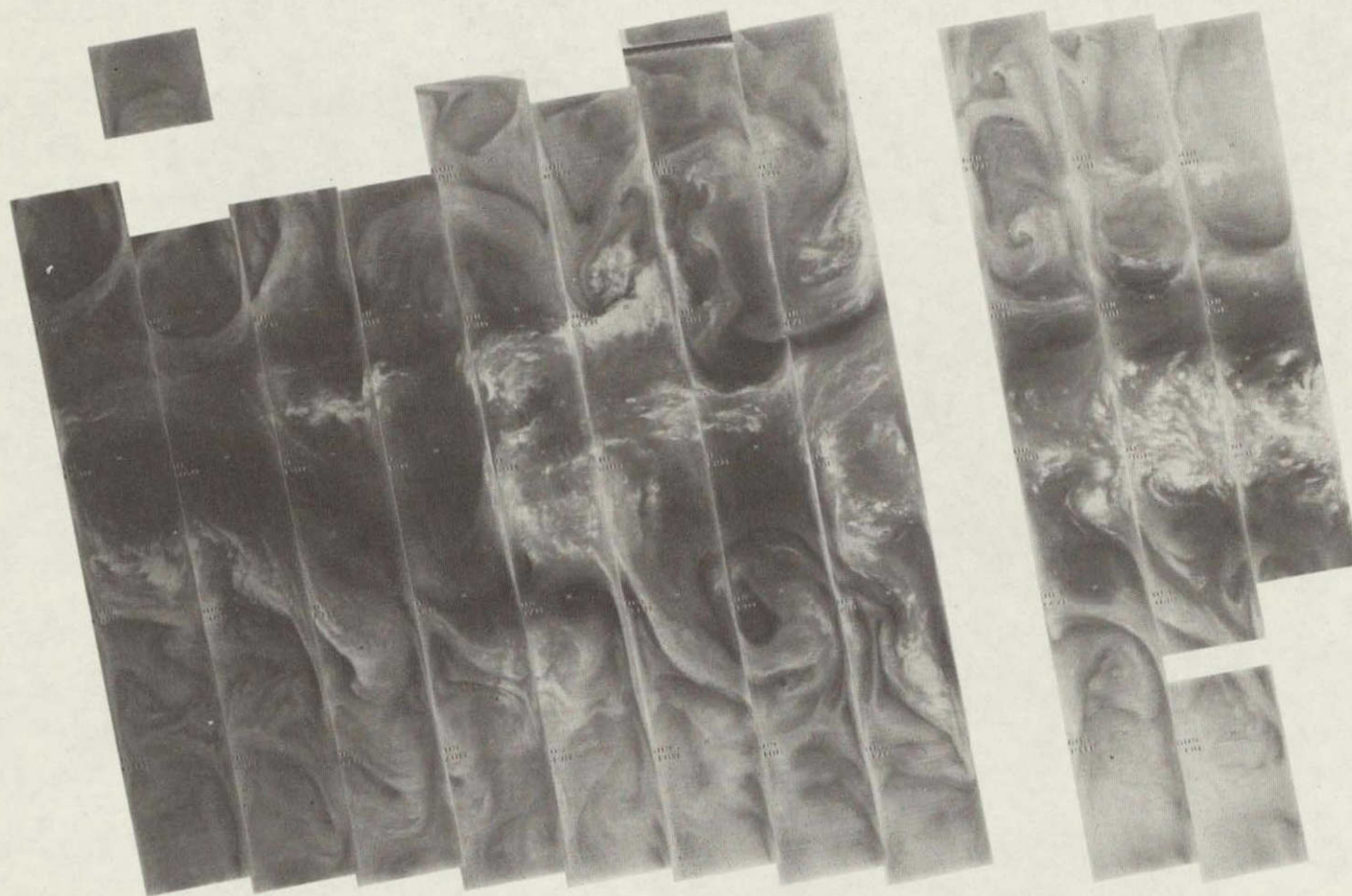
2141 2140 2139 2138 2137 2136 2135 2134 2133 2132 2131 2130 2129

18 NOVEMBER 1975

11.5 μ m

4-165

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OF POOR QUALITY

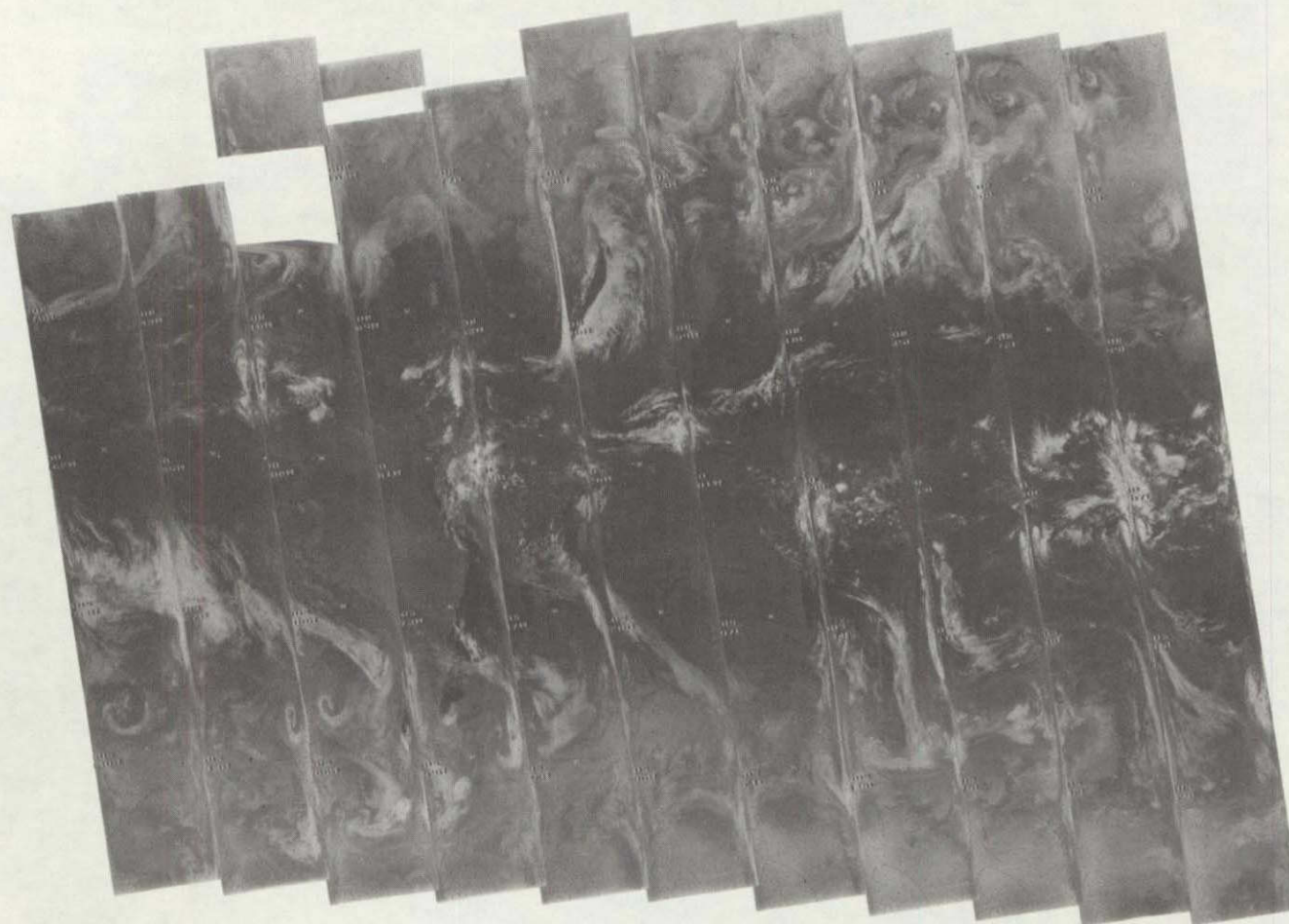


2141 2140 2139 2138 2137 2136 2135 2134 2133 2132 2131 2130 2129

18 NOVEMBER 1975

6.7 μm

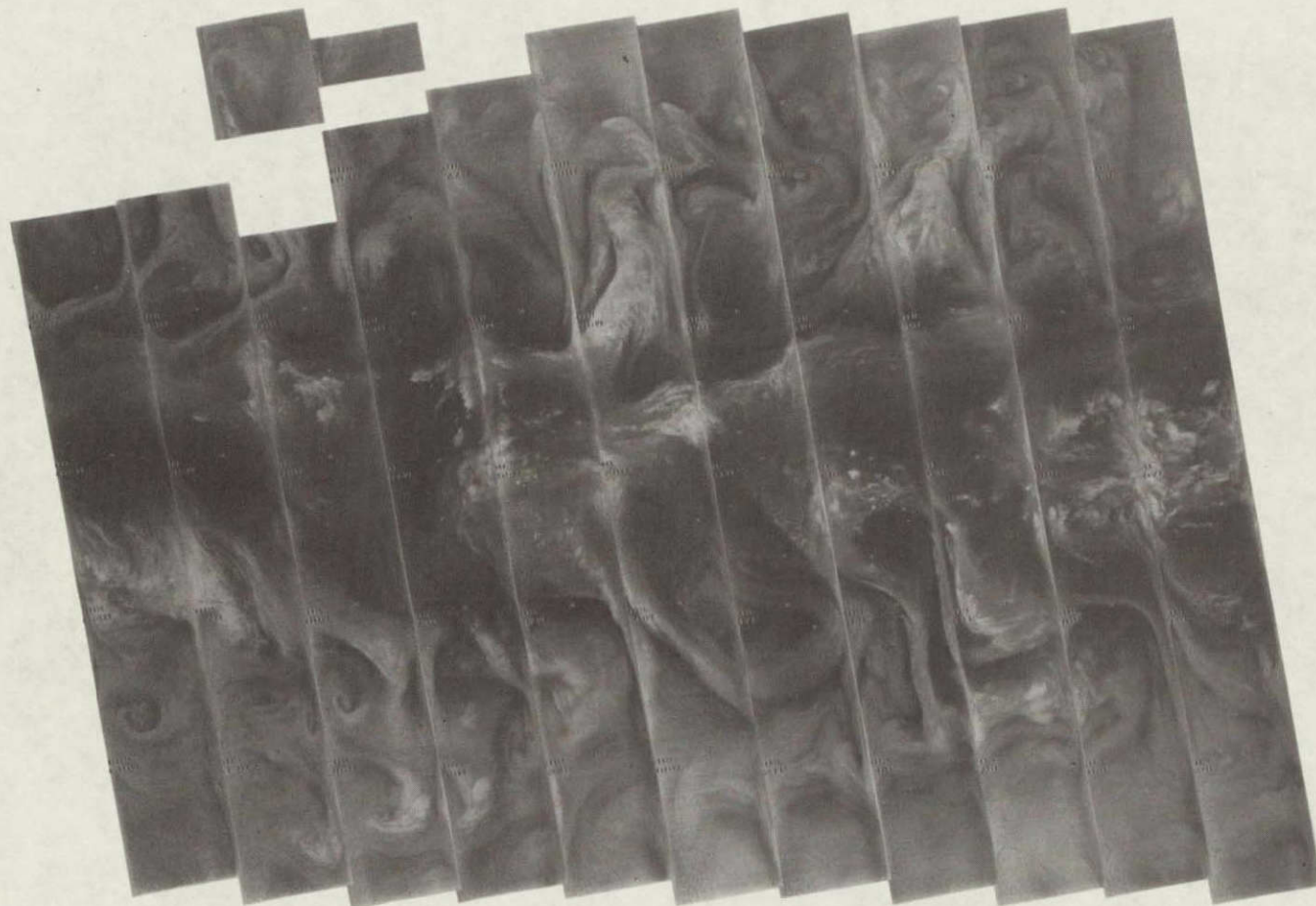
4-166



2154 2153 2152 2151 2150 2149 2148 2147 2146 2145 2144 2143 2142

19 NOVEMBER 1975

11.5 μm



2154 2153 2152 2151 2150 2149 2148 2147 2146 2145 2144 2143 2142

19 NOVEMBER 1975

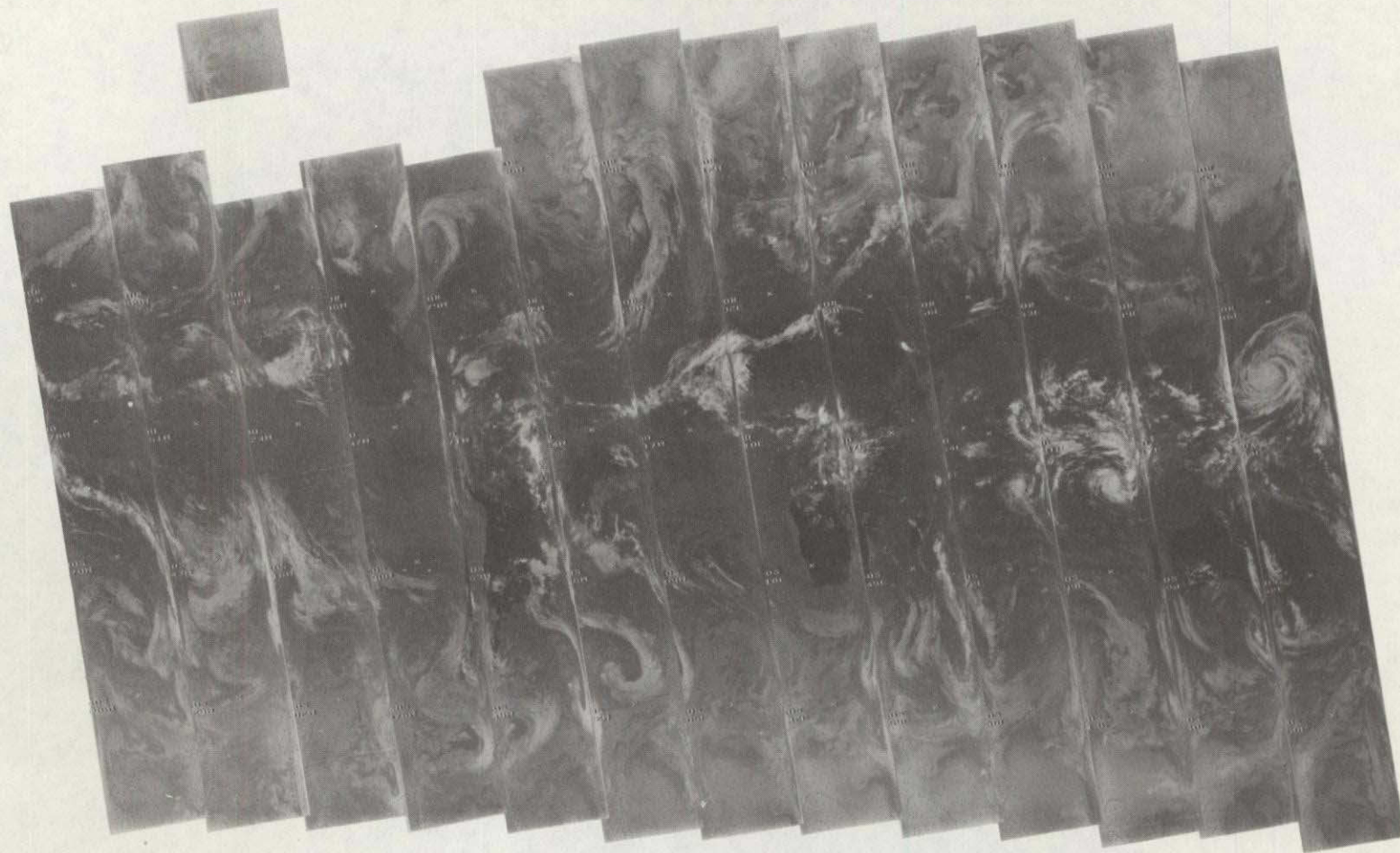
6.7 μm

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4-167

4-168

+

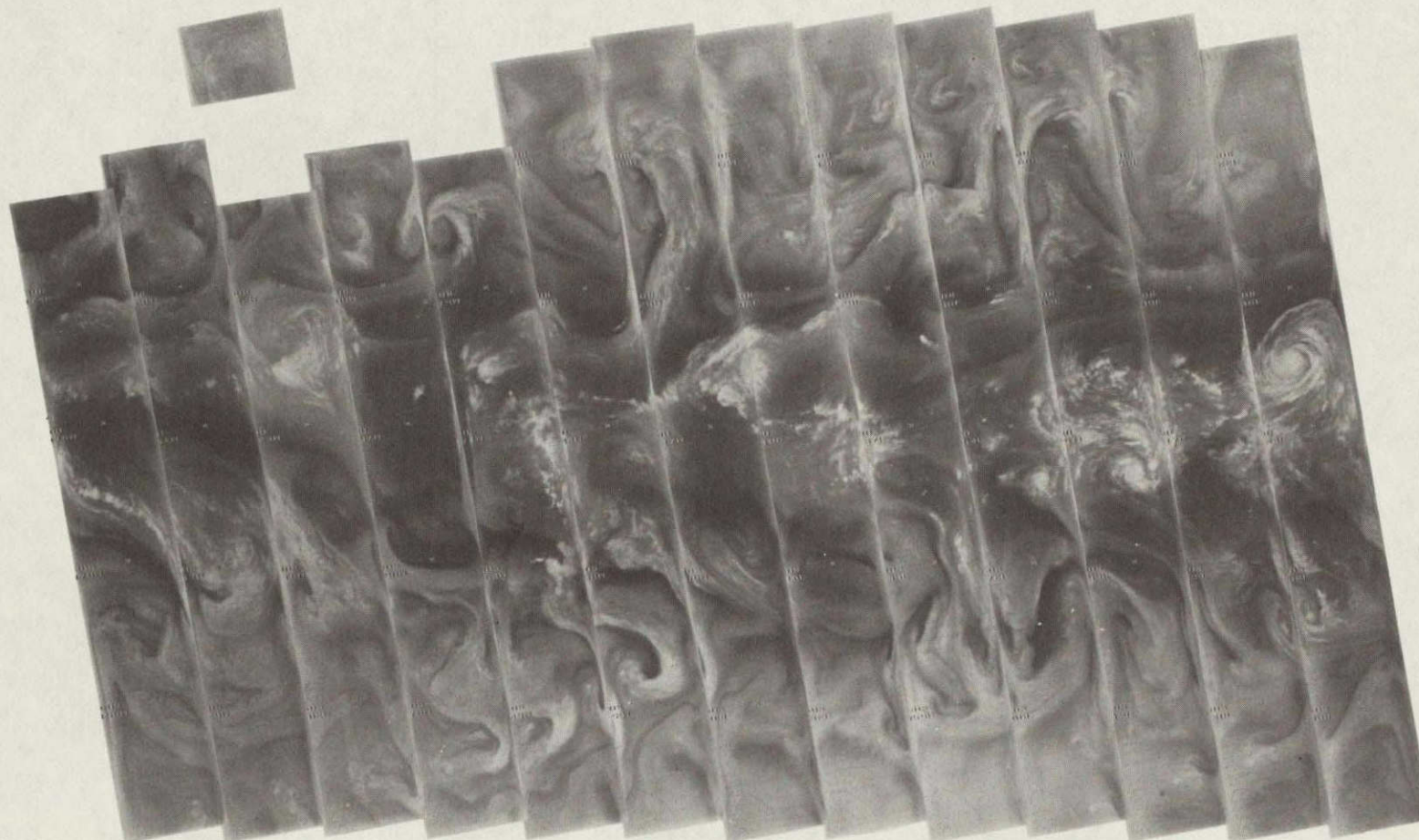


+

2168 2167 2166 2165 2164 2163 2162 2161 2160 2159 2158 2157 2156 2155

20 NOVEMBER 1975

11.5 μm



2168 2167 2166 2165 2164 2163 2162 2161 2160 2159 2158 2157 2156 2155

20 NOVEMBER 1975

6.7 μm

4-169

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4-170



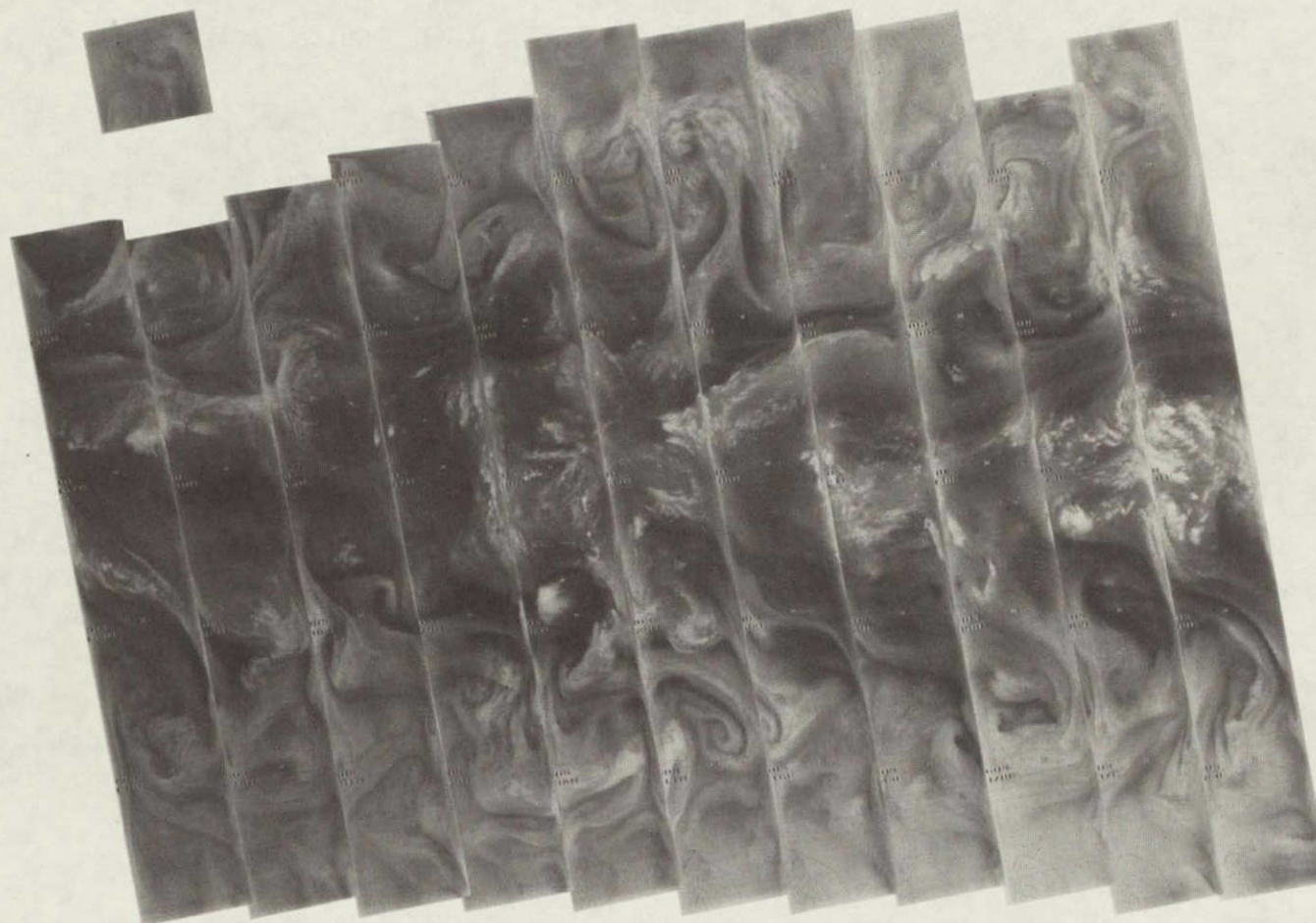
2181 2180 2179 2178 2177 2176 2175 2174 2173 2172 2171 2170 2169

21 NOVEMBER 1975

11.5 μm

4-171

ORIGINAL PAGE IS
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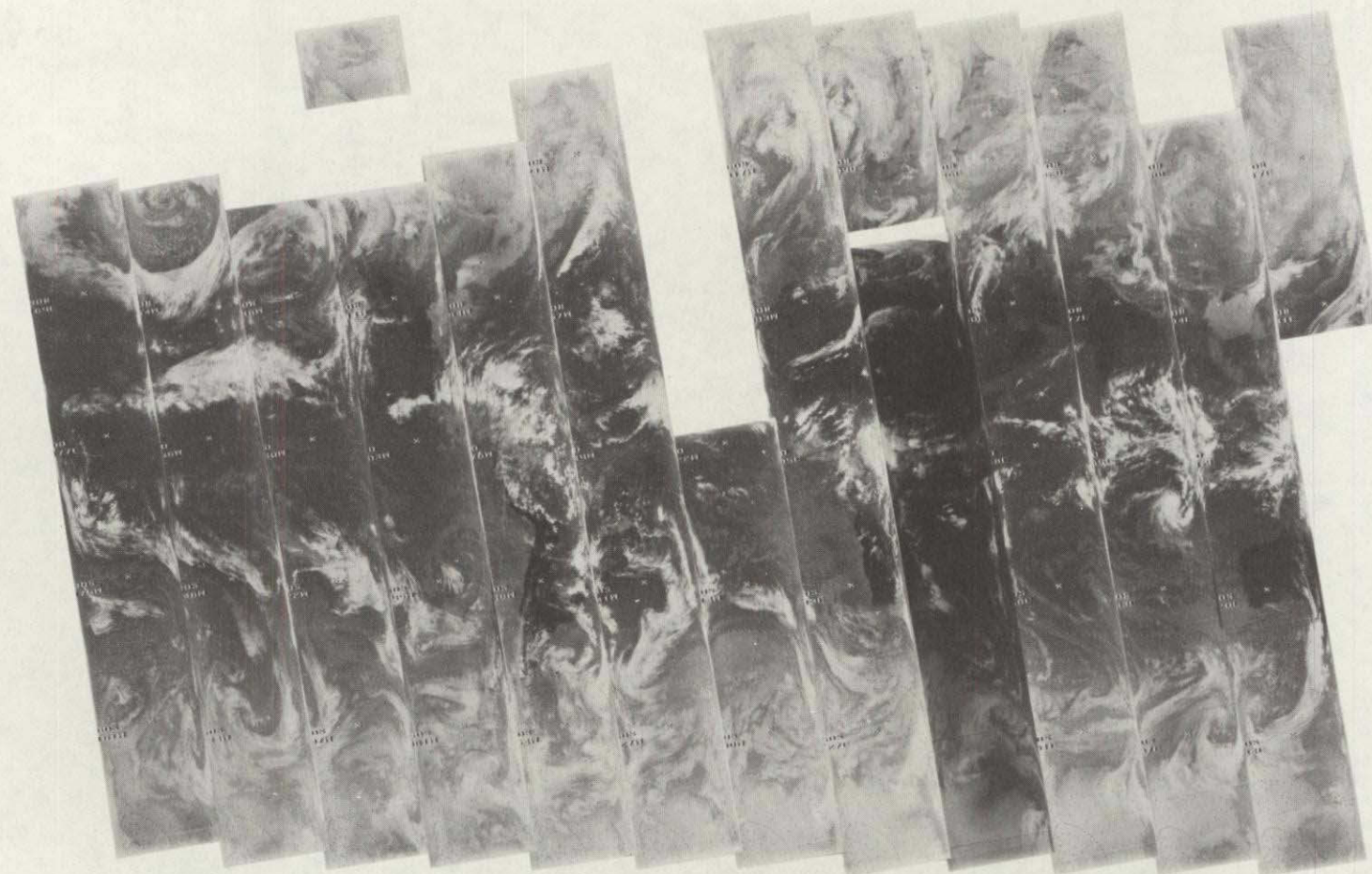


2181 2180 2179 2178 2177 2176 2175 2174 2173 2172 2171 2170 2169

21 NOVEMBER 1975

6.7 μm

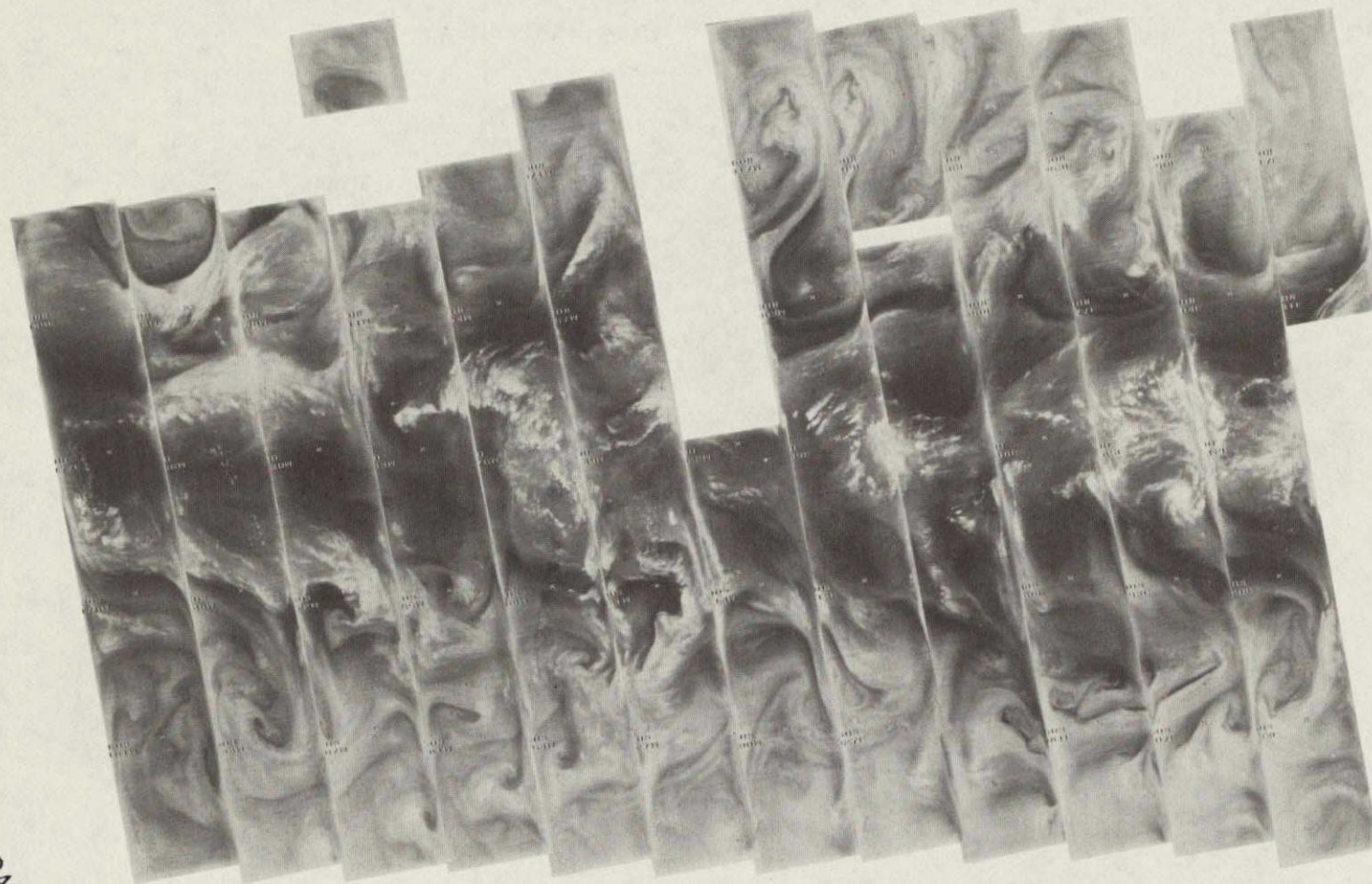
4-172



2195 2194 2193 2192 2191 2190 2189 2188 2187 2186 2185 2184 2183 2182

22 NOVEMBER 1975

11.5 μm



4-173

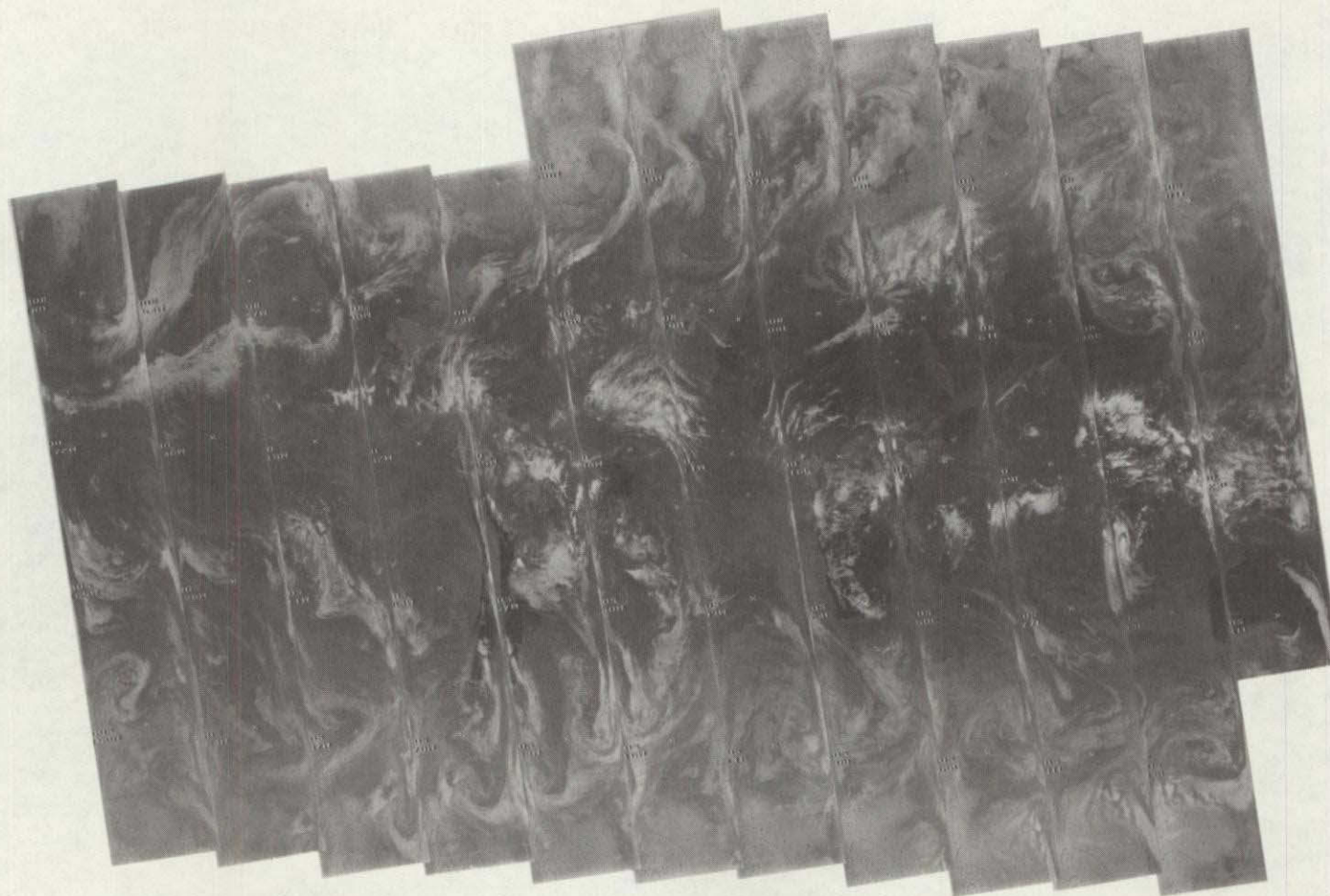
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2195 2194 2193 2192 2191 2190 2189 2188 2187 2186 2185 2184 2183 2182

22 NOVEMBER 1975

6.7 μm

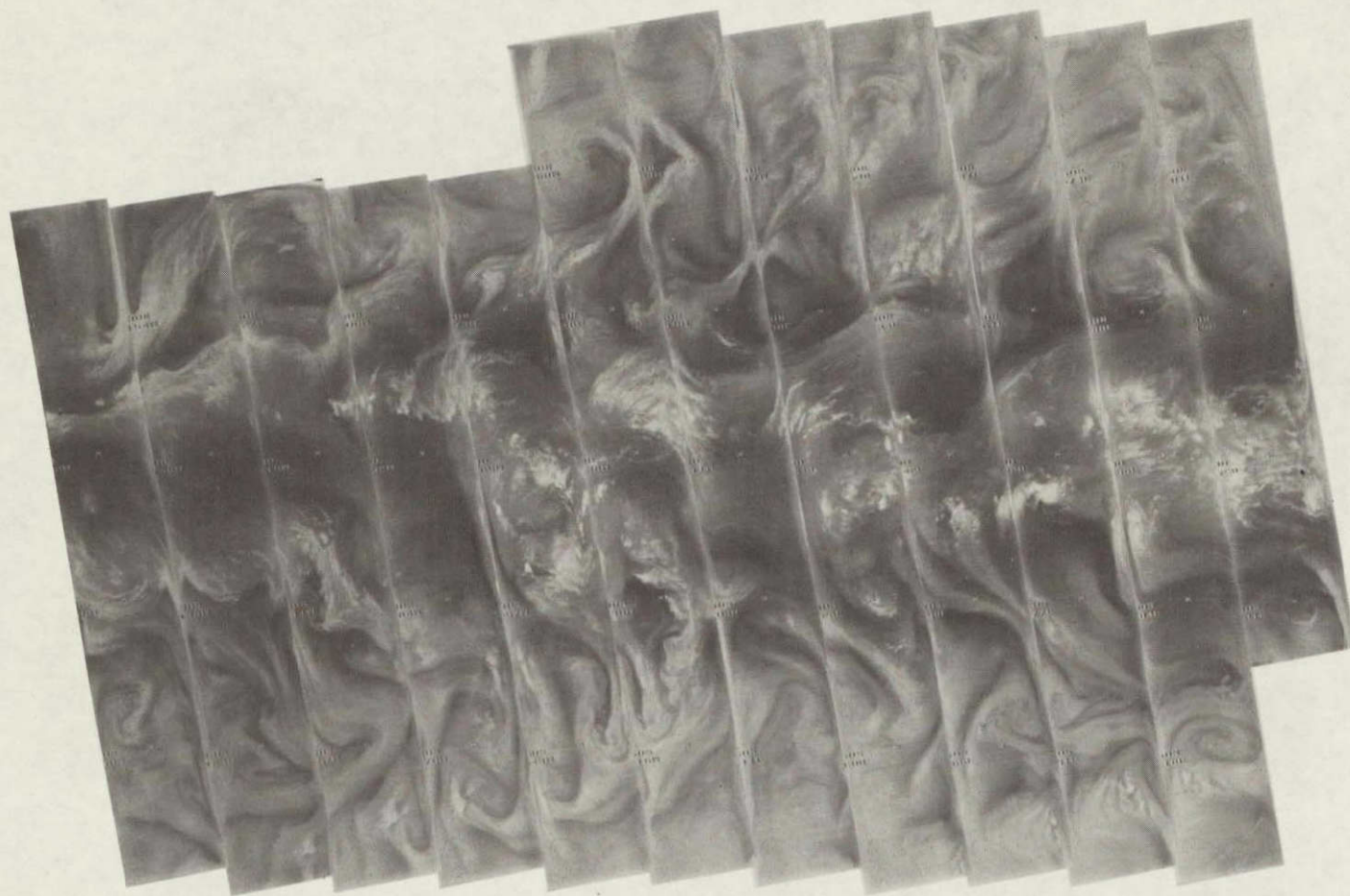
4-174



2208 2207 2206 2205 2204 2203 2202 2201 2200 2199 2198 2197 2196

23 NOVEMBER 1975

11.5 μm



2208 2207 2206 2205 2204 2203 2202 2201 2200 2199 2198 2197 2196

23 NOVEMBER 1975

6.7 μm

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4-175

4-176

T

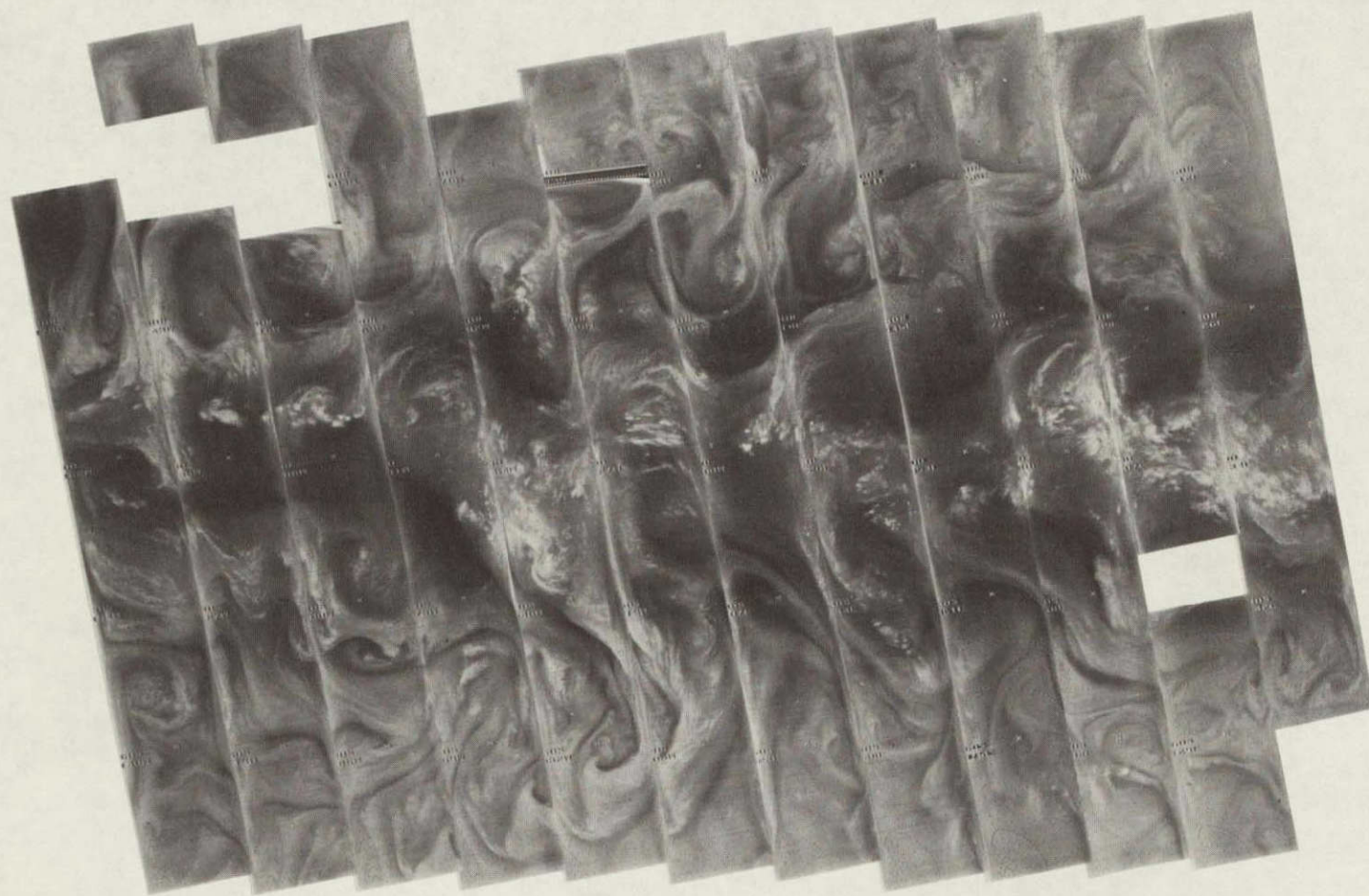


T

2221 2220 2219 2218 2217 2216 2215 2214 2213 2212 2211 2210 2209

24 NOVEMBER 1975

11.5 μm



2221 2220 2219 2218 2217 2216 2215 2214 2213 2212 2211 2210 2209

24 NOVEMBER 1975

6.7 μm

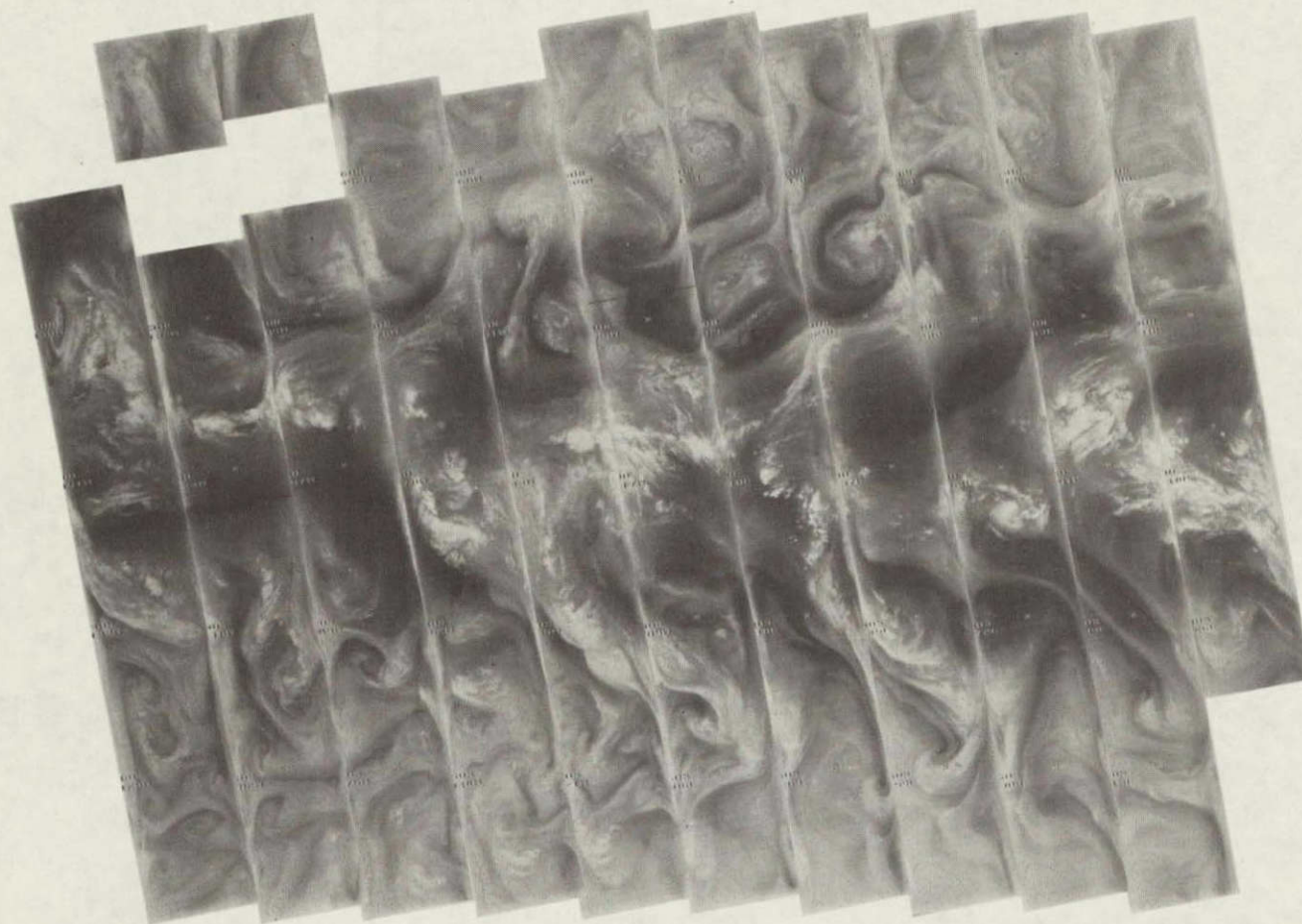
4-177

ORIGINAL PAGE IS
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十

11.5 μm

4-179



2235 2234 2233 2232 2231 2230 2229 2228 2227 2226 2225 2224 2223 2222

25 NOVEMBER 1975

6.7 μm

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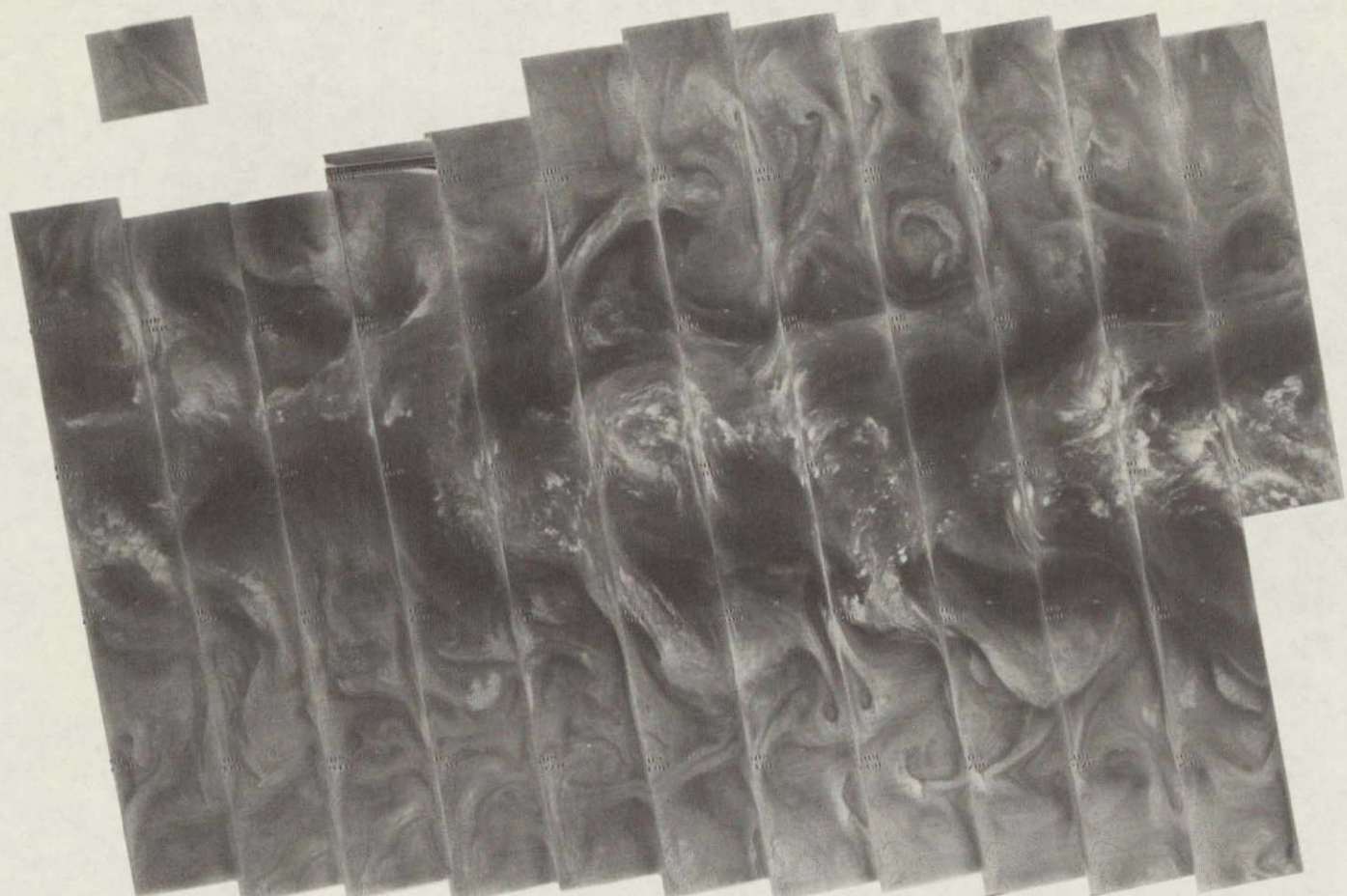


2248 2247 2246 2245 2244 2243 2242 2241 2240 2239 2238 2237 2236

26 NOVEMBER 1975

11.5 μm

4-180



4-181

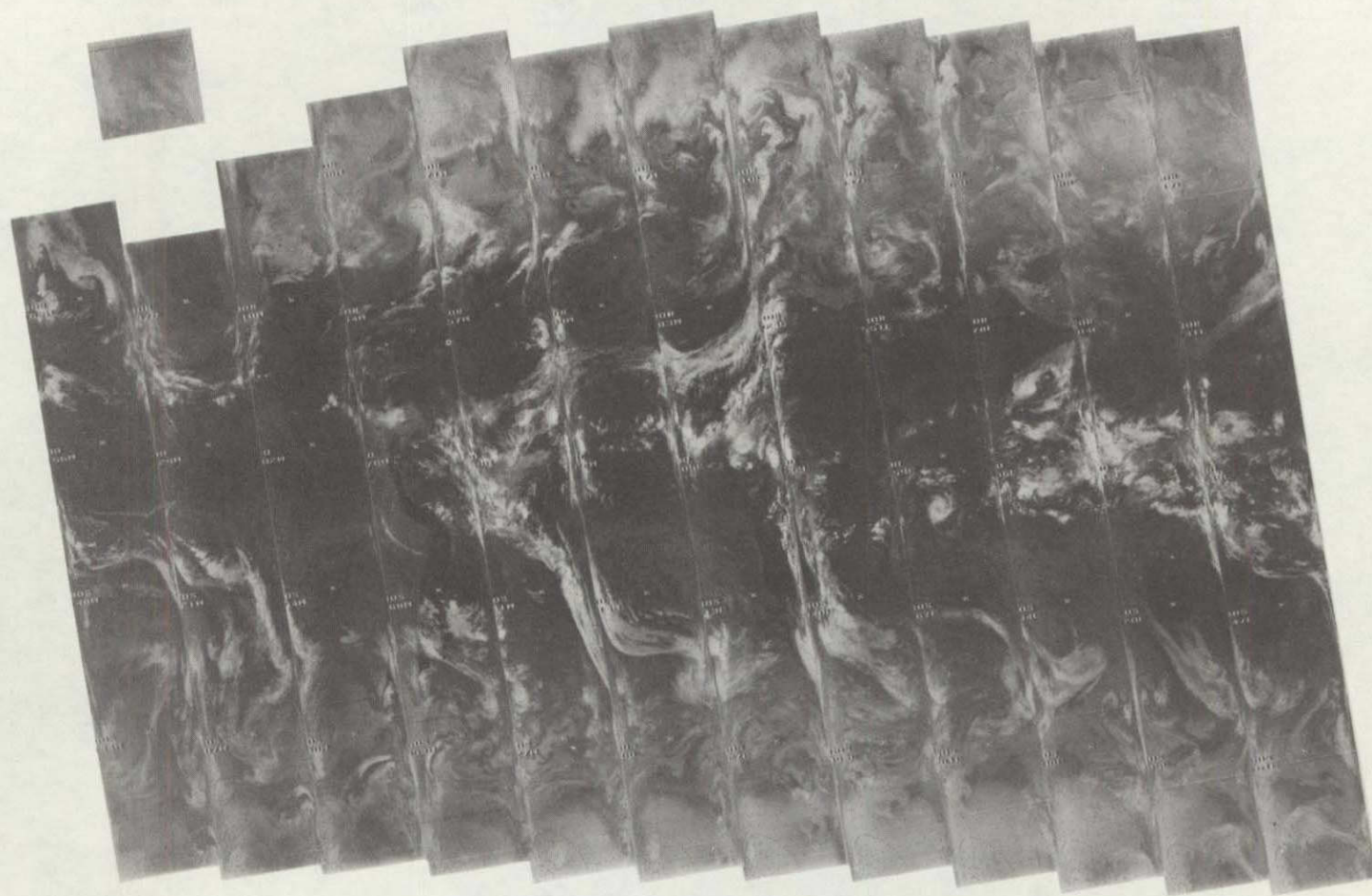
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2248 2247 2246 2245 2244 2243 2242 2241 2240 2239 2238 2237 2236

26 NOVEMBER 1975

6.7 μm

4-182



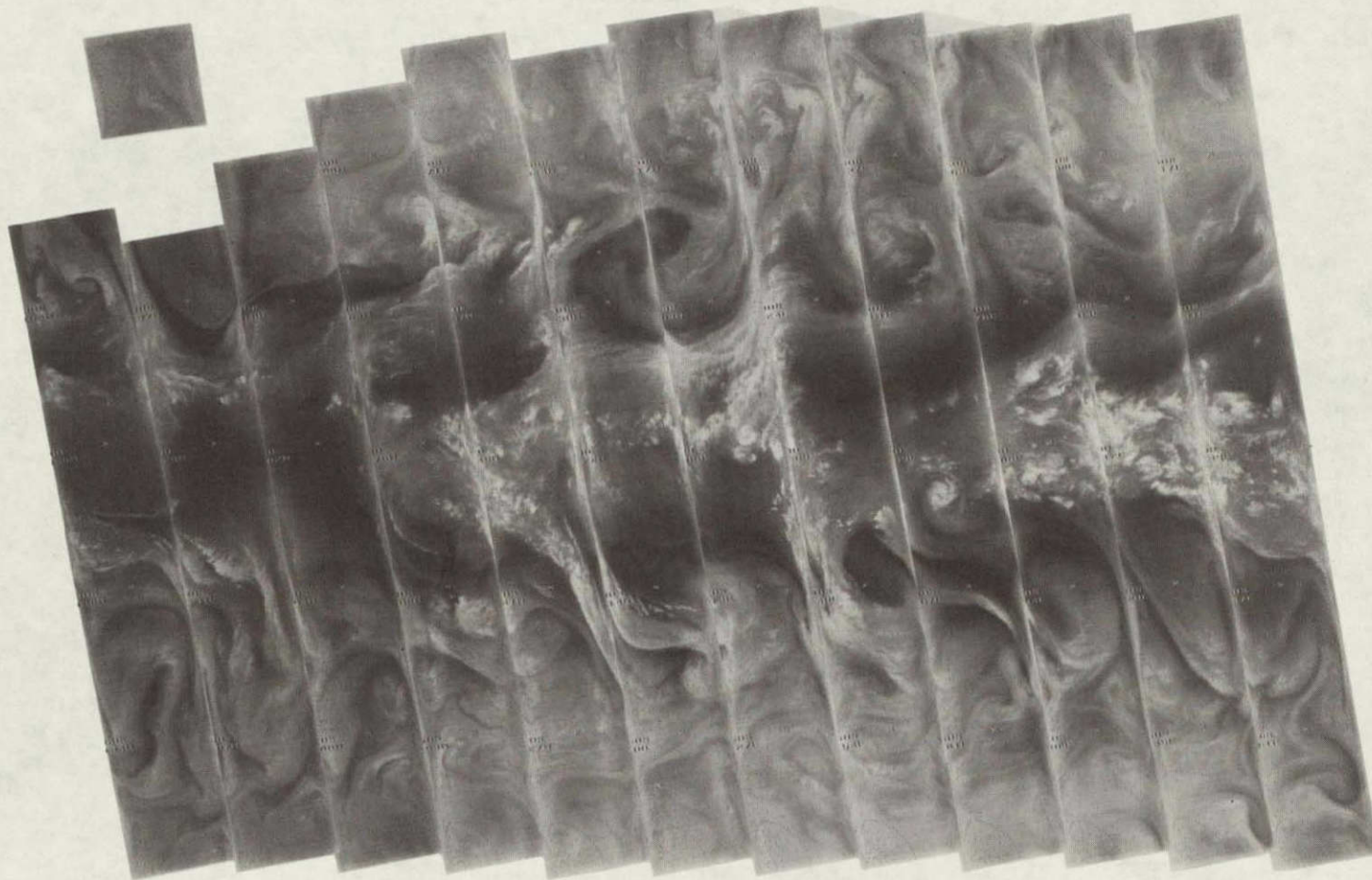
2262 2261 2260 2259 2258 2257 2256 2255 2254 2253 2252 2251 2250 2249

27 NOVEMBER 1975

11.5 μm

4-183

ORIGINAL PAGE IS
OF POOR QUALITY

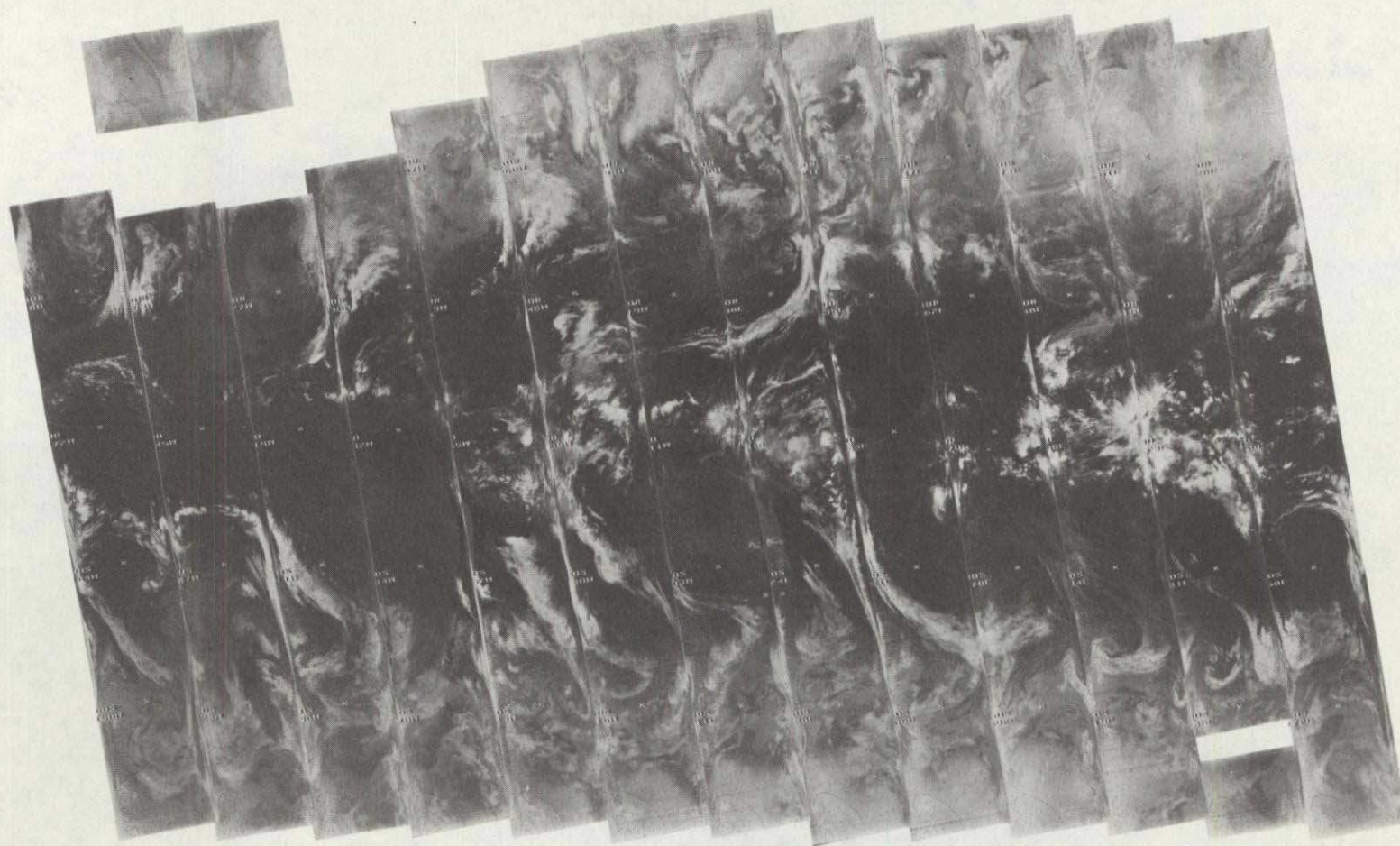


2262 2261 2260 2259 2258 2257 2256 2255 2254 2253 2252 2251 2250 2249

27 NOVEMBER 1975

6.7 μm

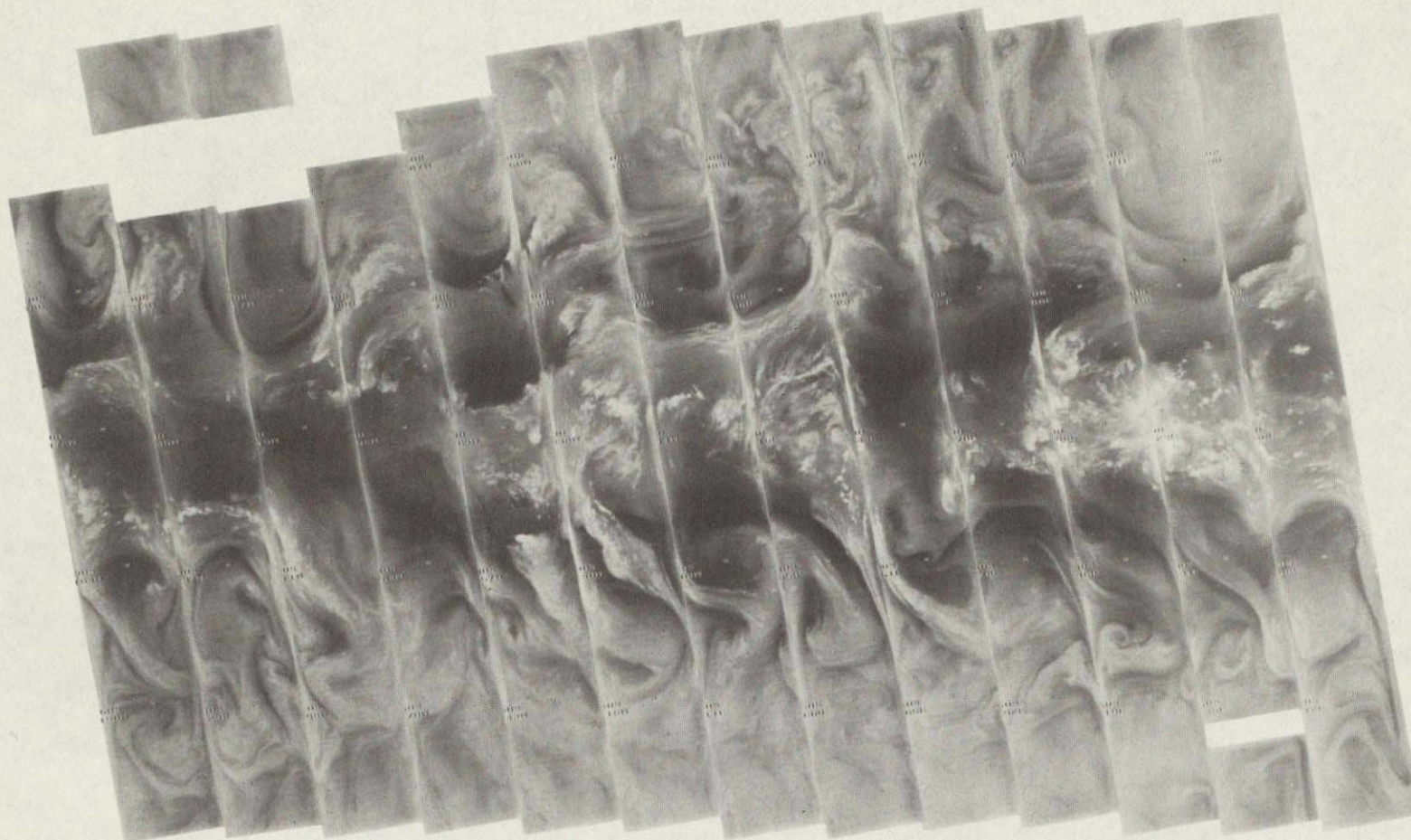
4-184



2275 2274 2273 2272 2271 2270 2269 2268 2267 2266 2265 2264 2263

28 NOVEMBER 1975

11.5 μm



2275 2274 2273 2272 2271 2270 2269 2268 2267 2266 2265 2264 2263

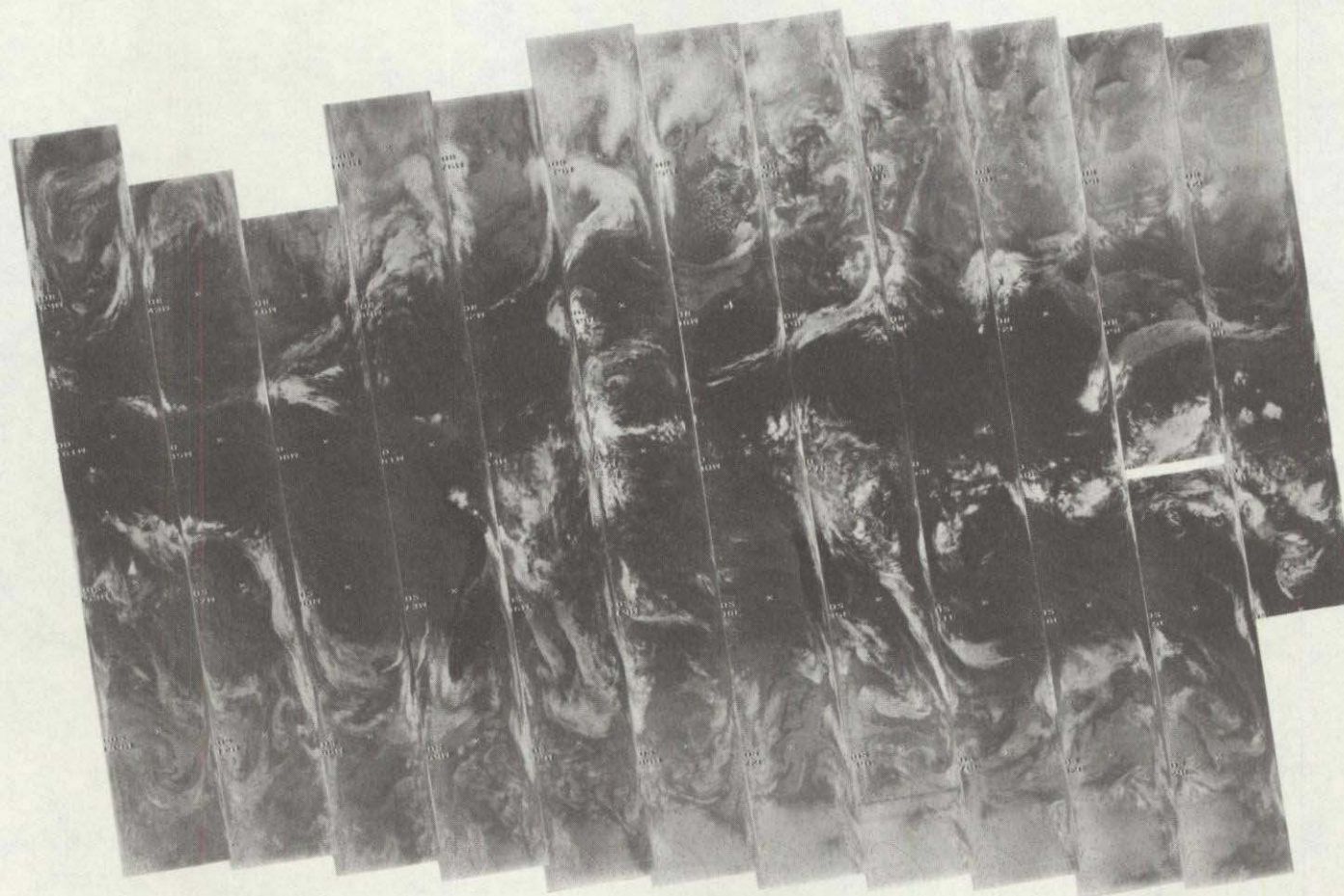
28 NOVEMBER 1975

6.7 μm

4-185

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OF POOR QUALITY

4-186



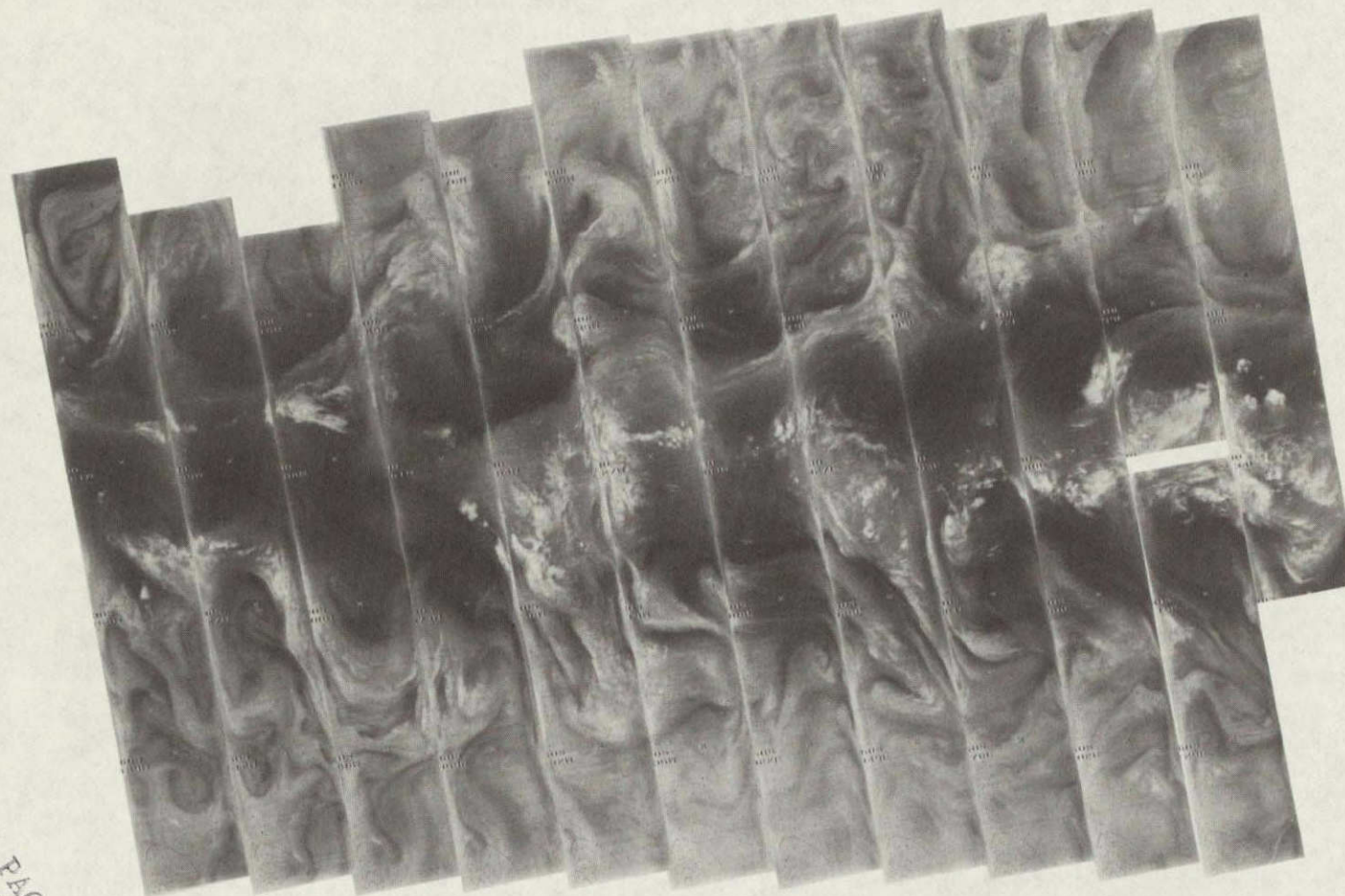
2288 2287 2286 2285 2284 2283 2282 2281 2280 2279 2278 2277 2276

29 NOVEMBER 1975

11.5 μm

4-187

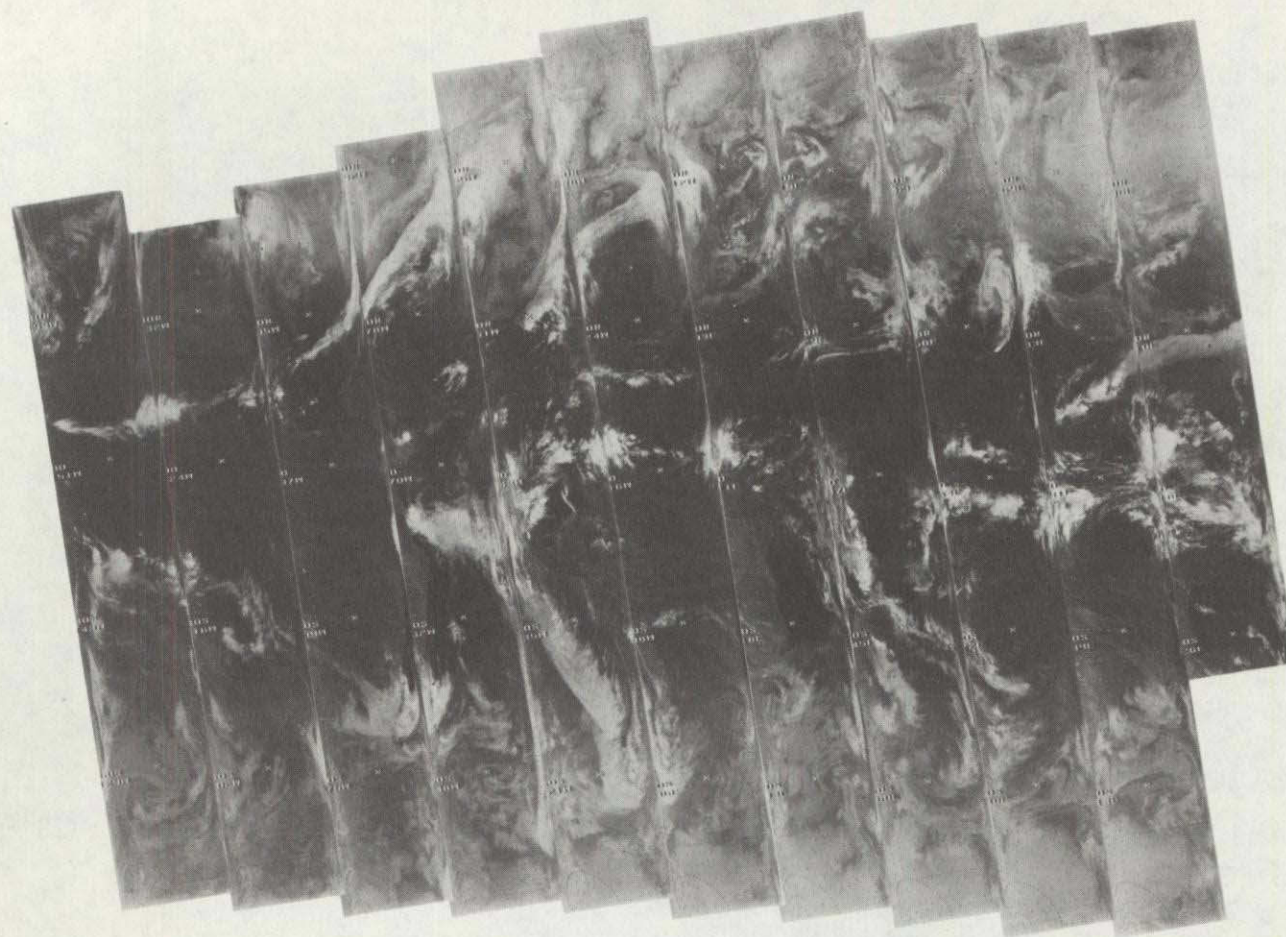
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OF POOR QUALITY



2288 2287 2286 2285 2284 2283 2282 2281 2280 2279 2278 2277 2276

29 NOVEMBER 1975

6.7 μm



2302 2301 2300 2299 2298 2297 2296 2295 2294 2293 2292 2291 2290 2289

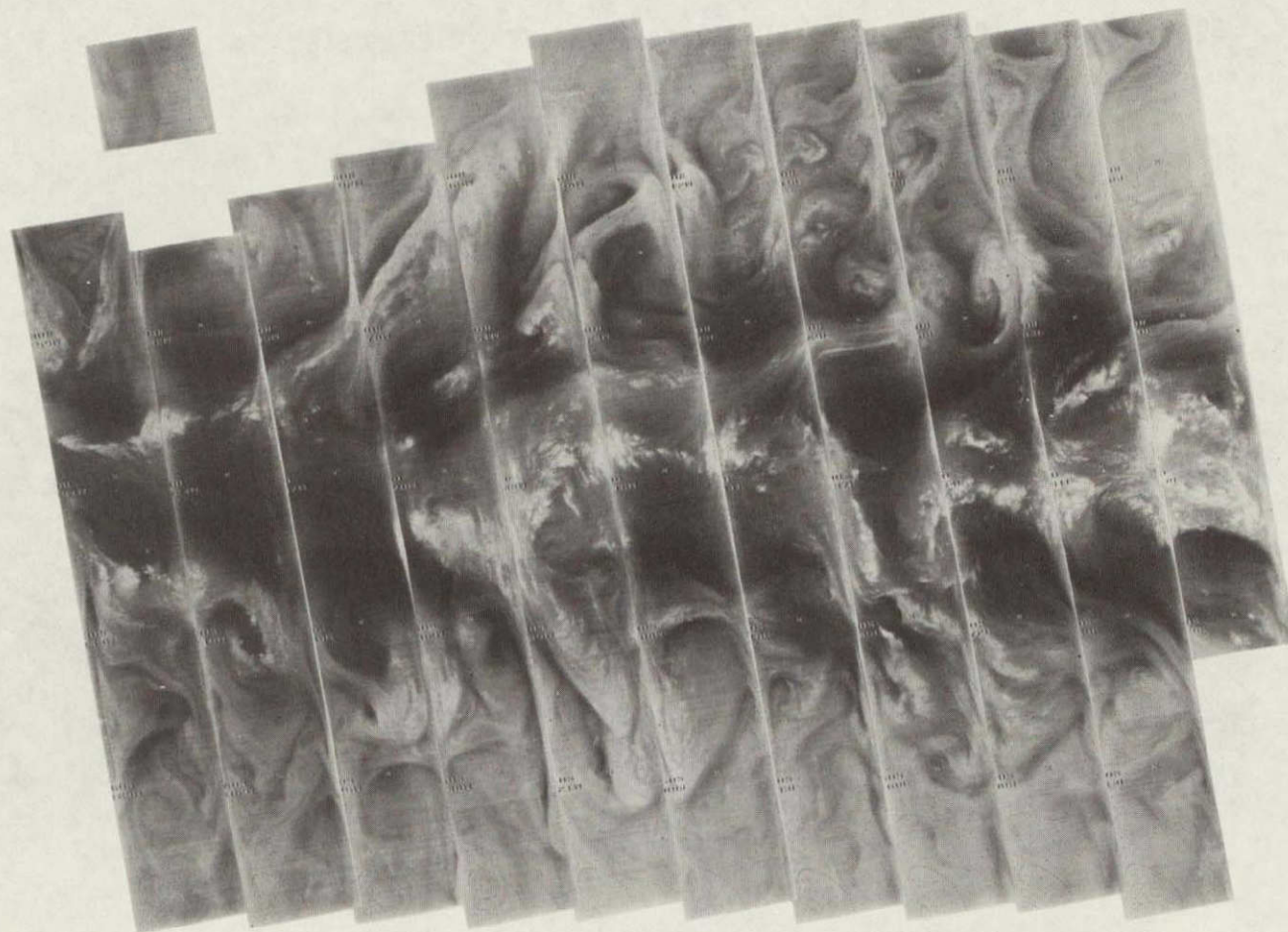
30 NOVEMBER 1975

11.5 μm

4-188

4-189

ORIGINAL PAGE IS
OF POOR QUALITY

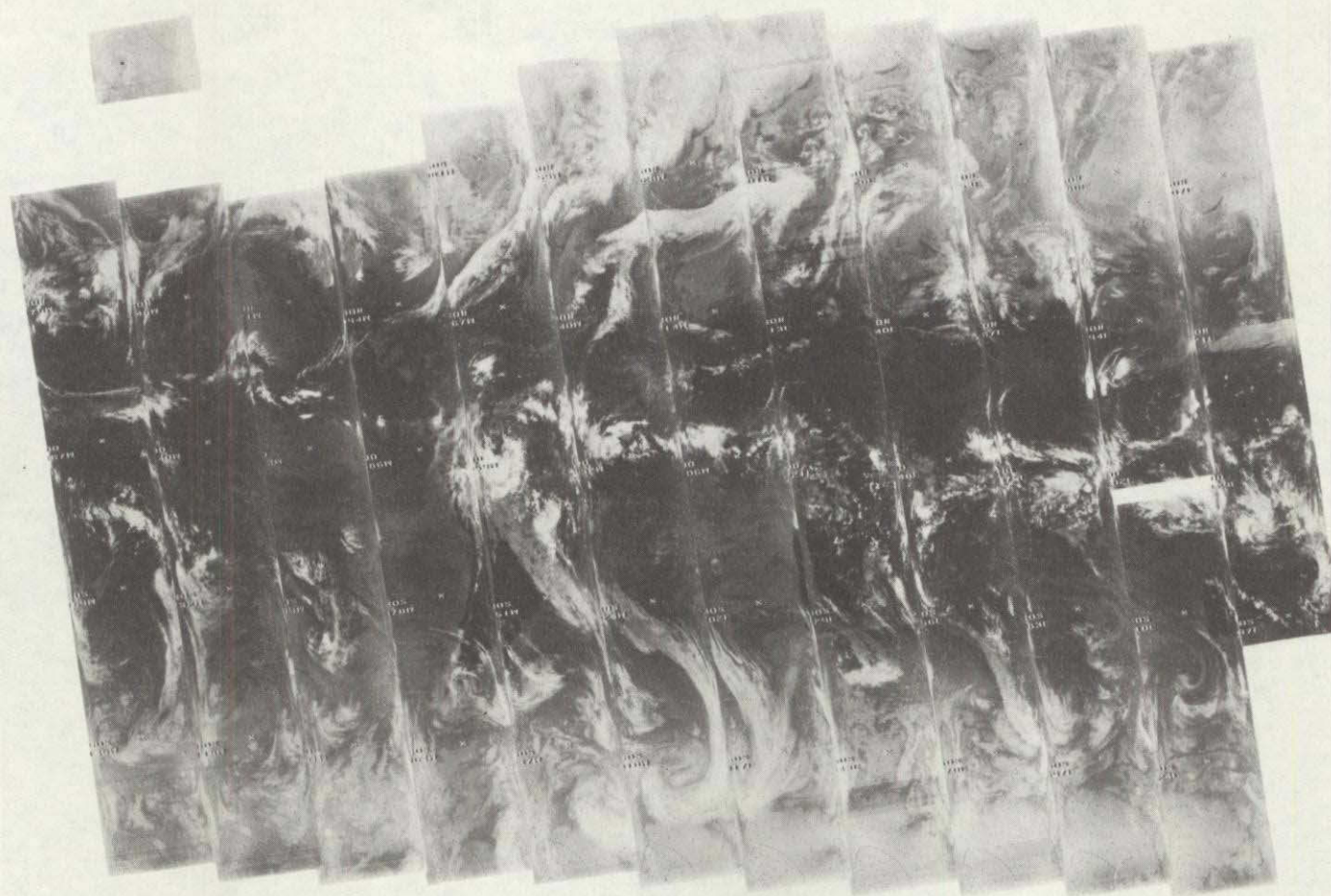


2302 2301 2300 2299 2298 2297 2296 2295 2294 2293 2292 2291 2290 2289

30 NOVEMBER 1975

6.7 μm

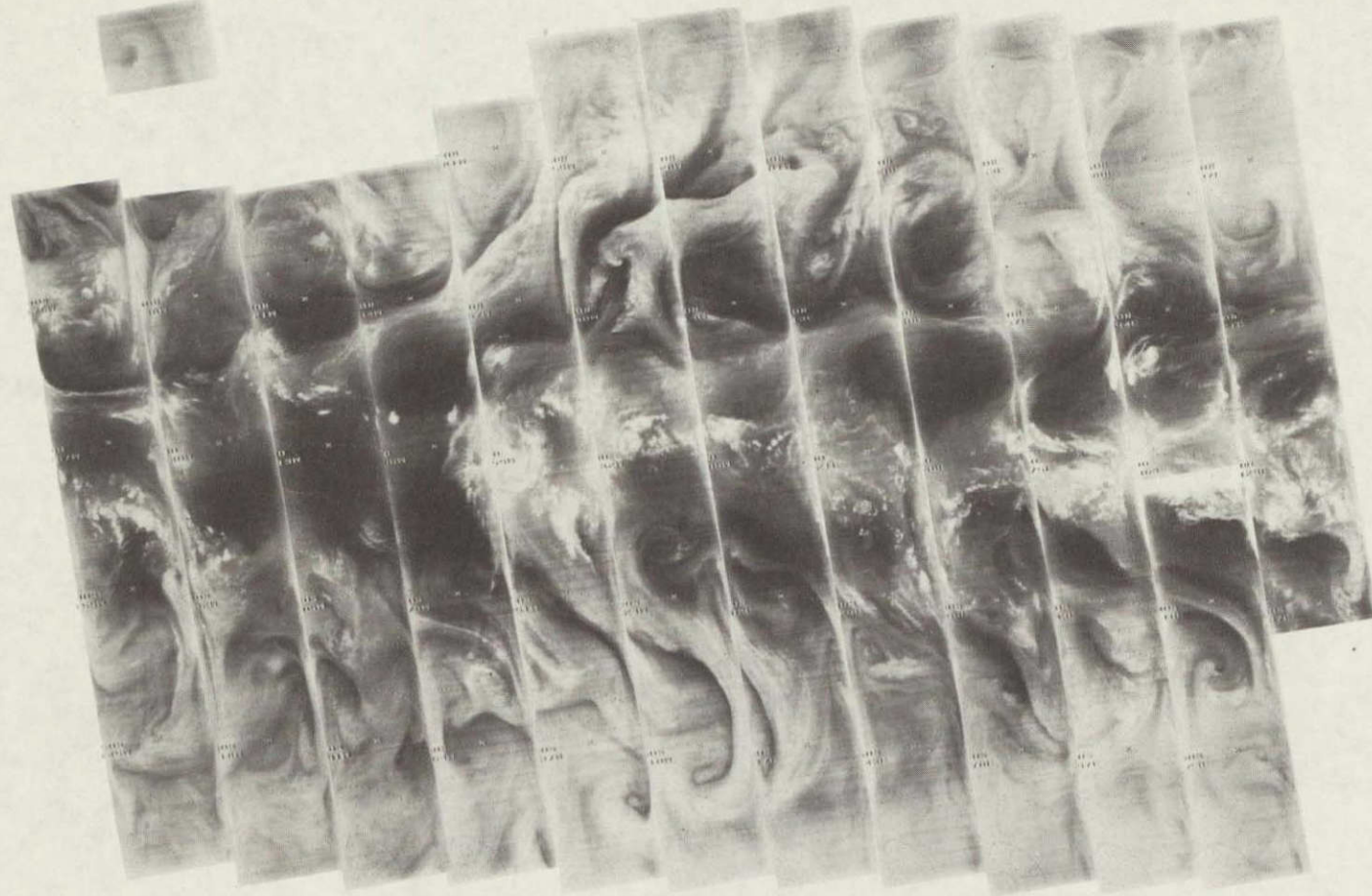
4-190



2315 2314 2313 2312 2311 2310 2309 2308 2307 2306 2305 2304 2303

1 DECEMBER 1975

11.5 μm



2315 2314 2313 2312 2311 2310 2309 2308 2307 2306 2305 2304 2303

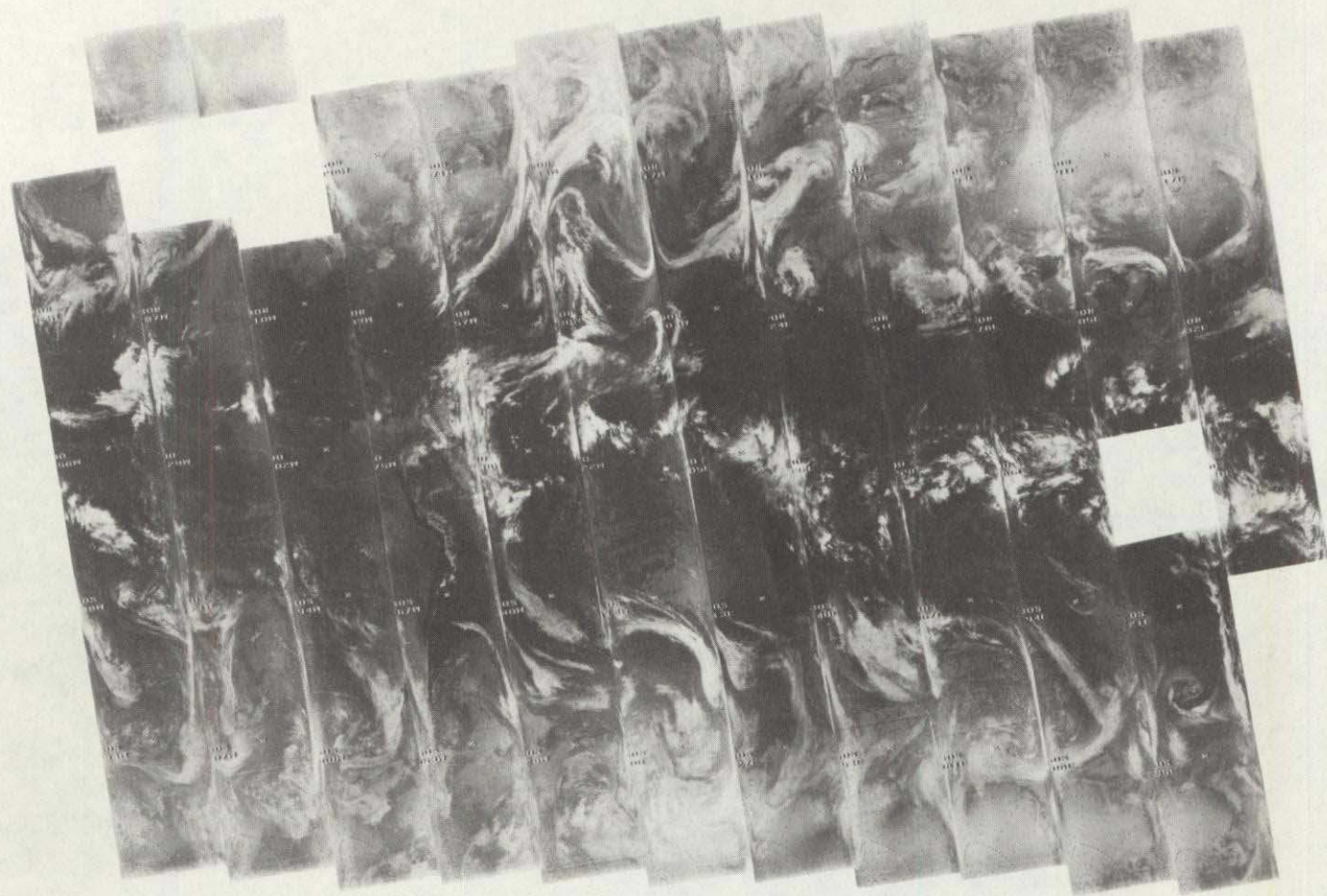
1 DECEMBER 1975

6.7 μm

4-191

ORIGINAL PAGE IS
OF POOR QUALITY

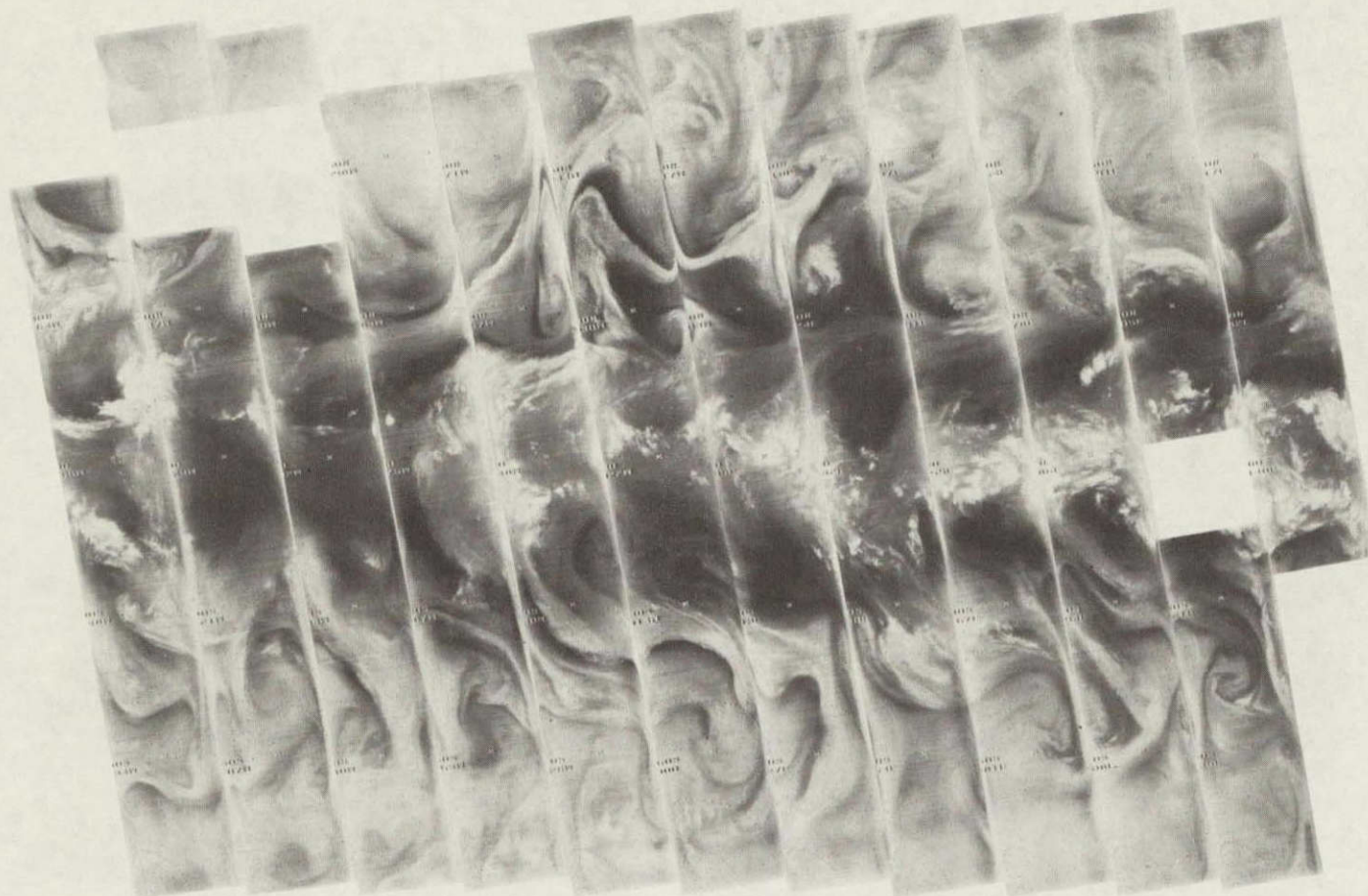
4-192



2329 2328 2327 2326 2325 2324 2323 2322 2321 2320 2319 2318 2317 2316

2 DECEMBER 1975

11.5 μm



2329 2328 2327 2326 2325 2324 2323 2322 2321 2320 2319 2318 2317 2316

2 DECEMBER 1975

6.7 μm

4-193

ORIGINAL PAGE IS
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4-194



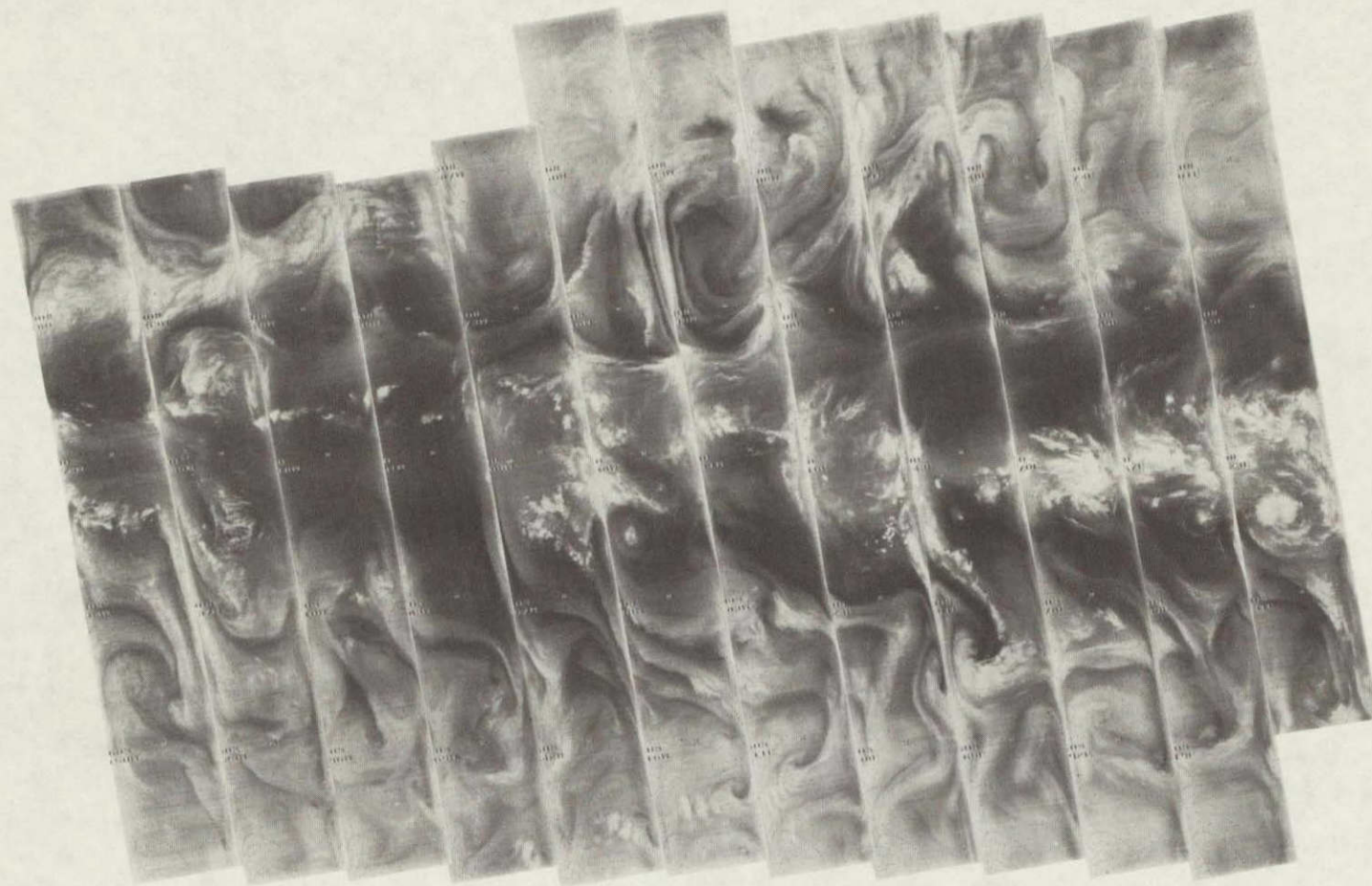
2342 2341 2340 2339 2338 2337 2336 2335 2334 2333 2332 2331 2330

3 DECEMBER 1975

11.5 μm

4-195

ORIGINAL PAGE IS
OF POOR QUALITY

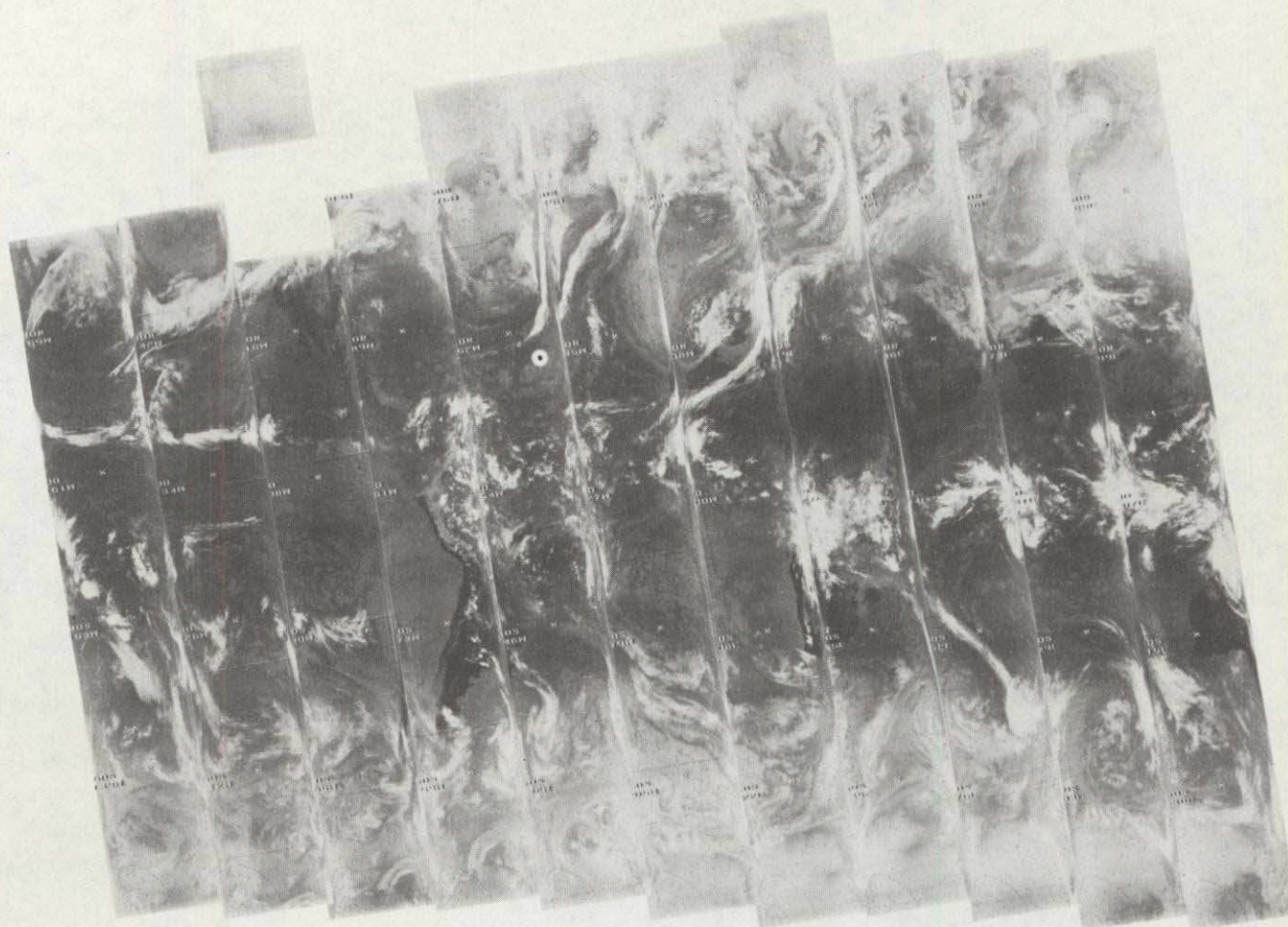


2342 2341 2340 2339 2338 2337 2336 2335 2334 2333 2332 2331 2330

3 DECEMBER 1975

6.7 μ m

4-196



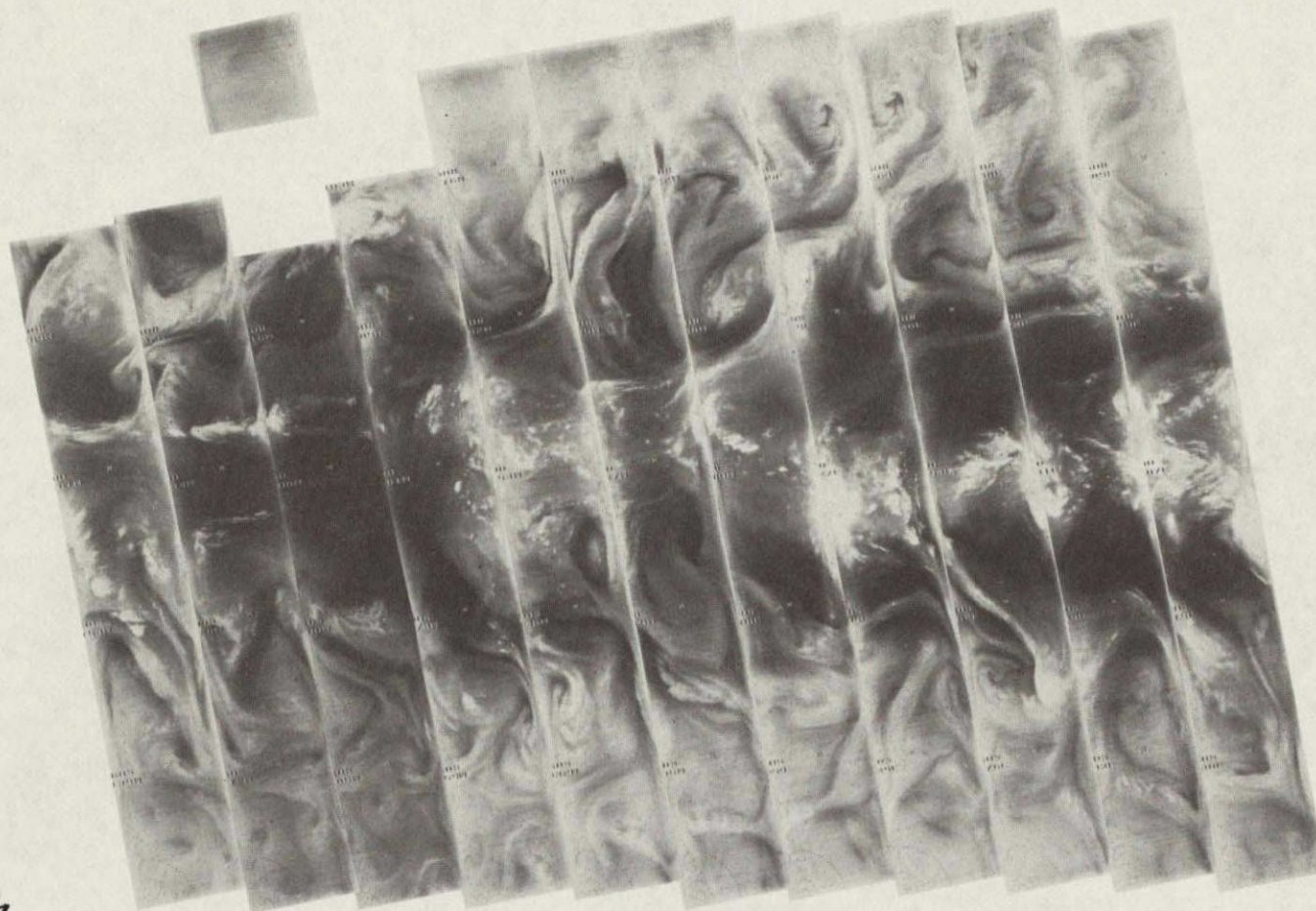
2355 2354 2353 2352 2351 2350 2349 2348 2347 2346 2345 2344 2343

4 DECEMBER 1975

11.5 μ m

4-197

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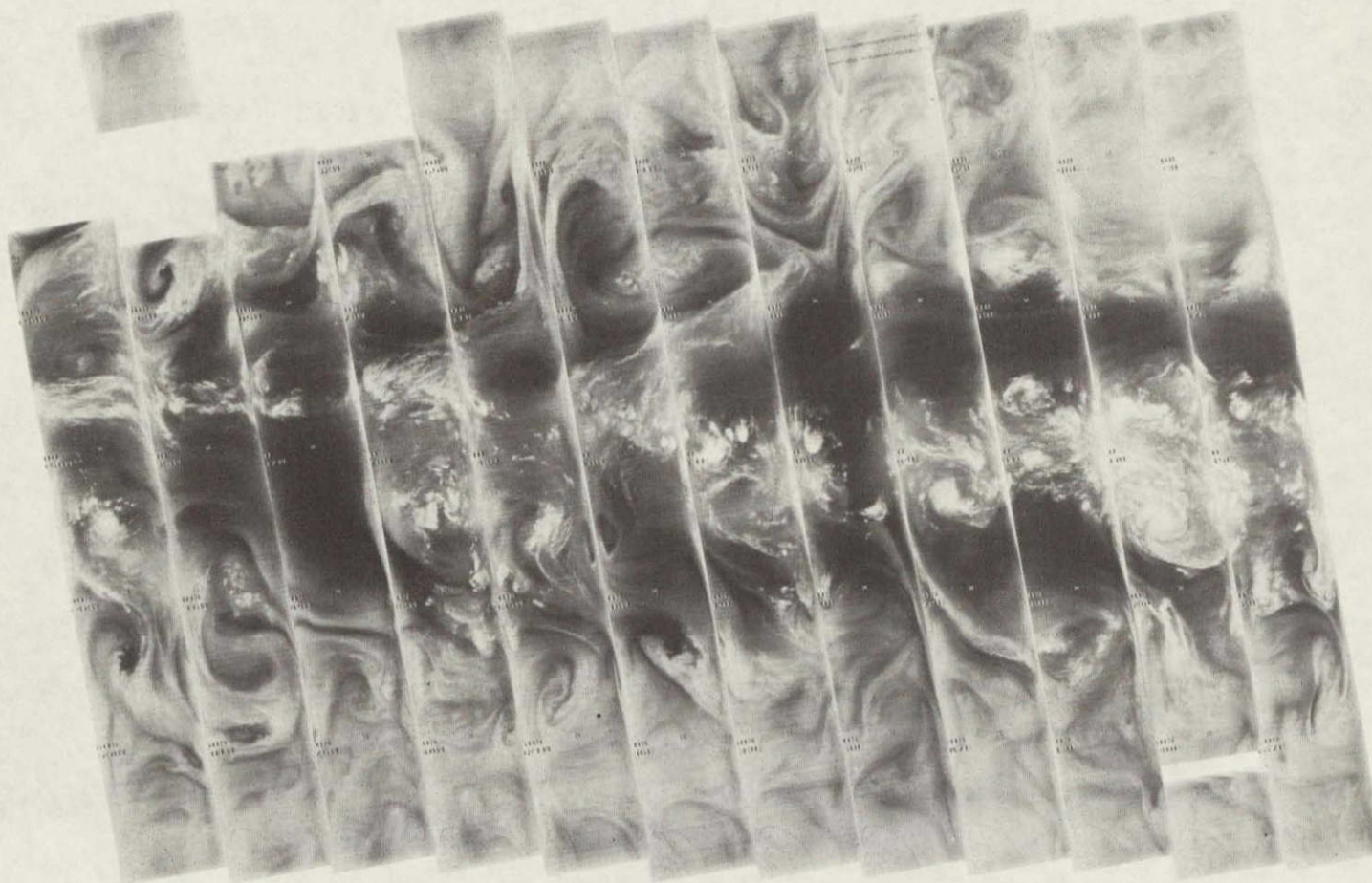
2355 2354 2353 2352 2351 2350 2349 2348 2347 2346 2345 2344 2343

4 DECEMBER 1975

6.7 μm

11.5 μm

4-199



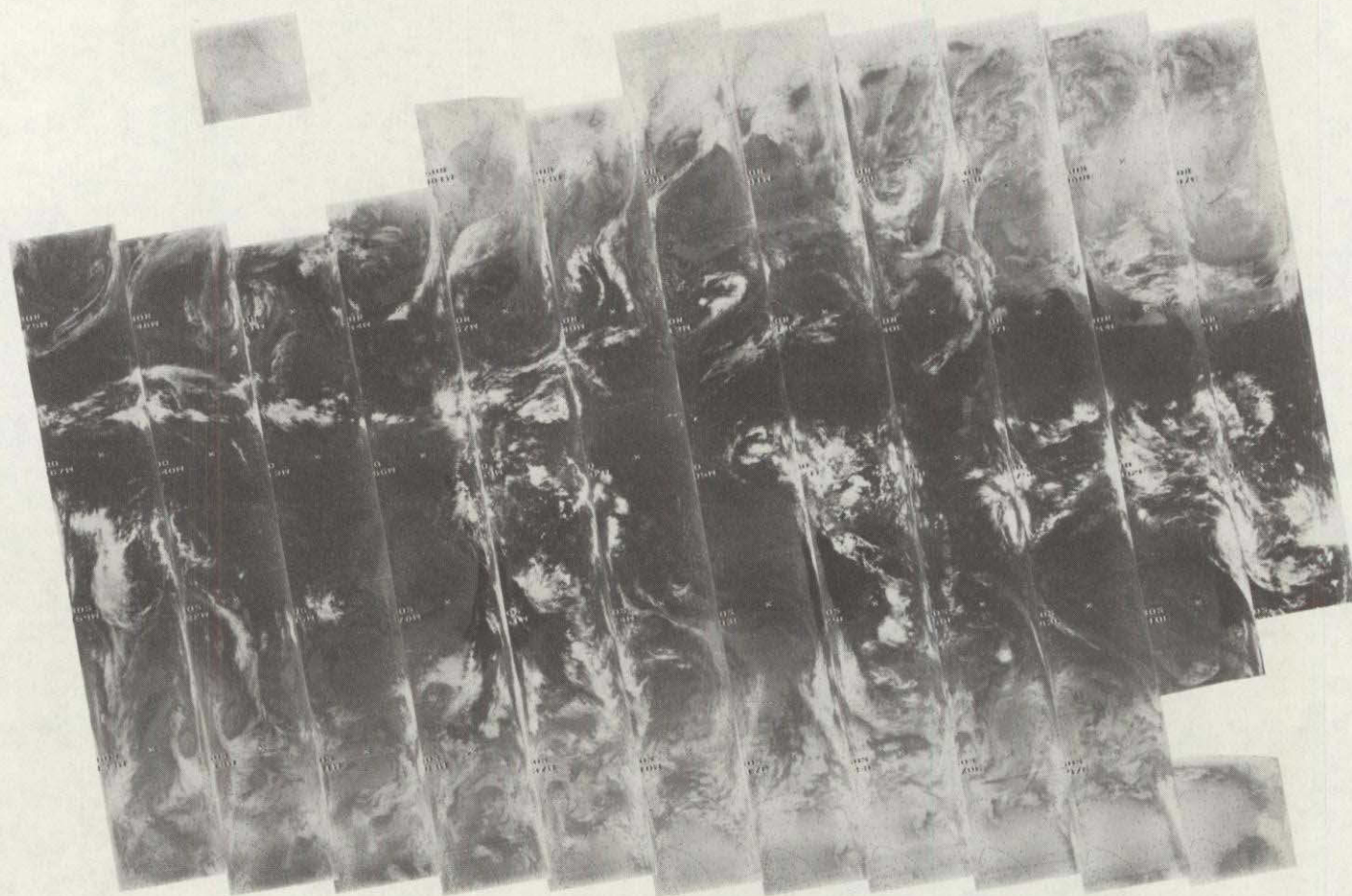
2369 2368 2367 2366 2365 2364 2363 2362 2361 2360 2359 2358 2357 2356

5 DECEMBER 1975

6.7 μ m

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4-200



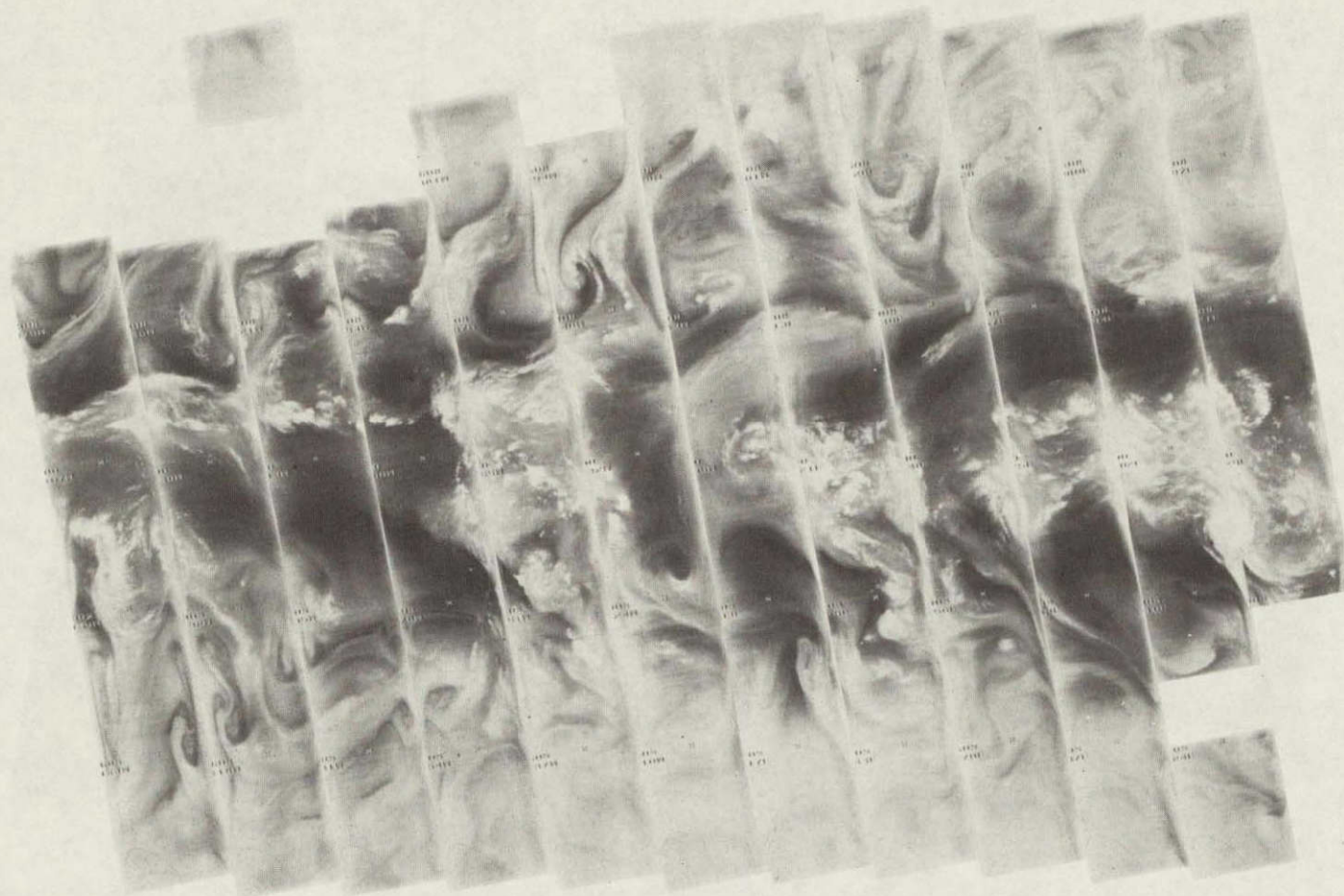
2382 2381 2380 2379 2378 2377 2376 2375 2374 2373 2372 2371 2370

6 DECEMBER 1975

11.5 μm

4-201

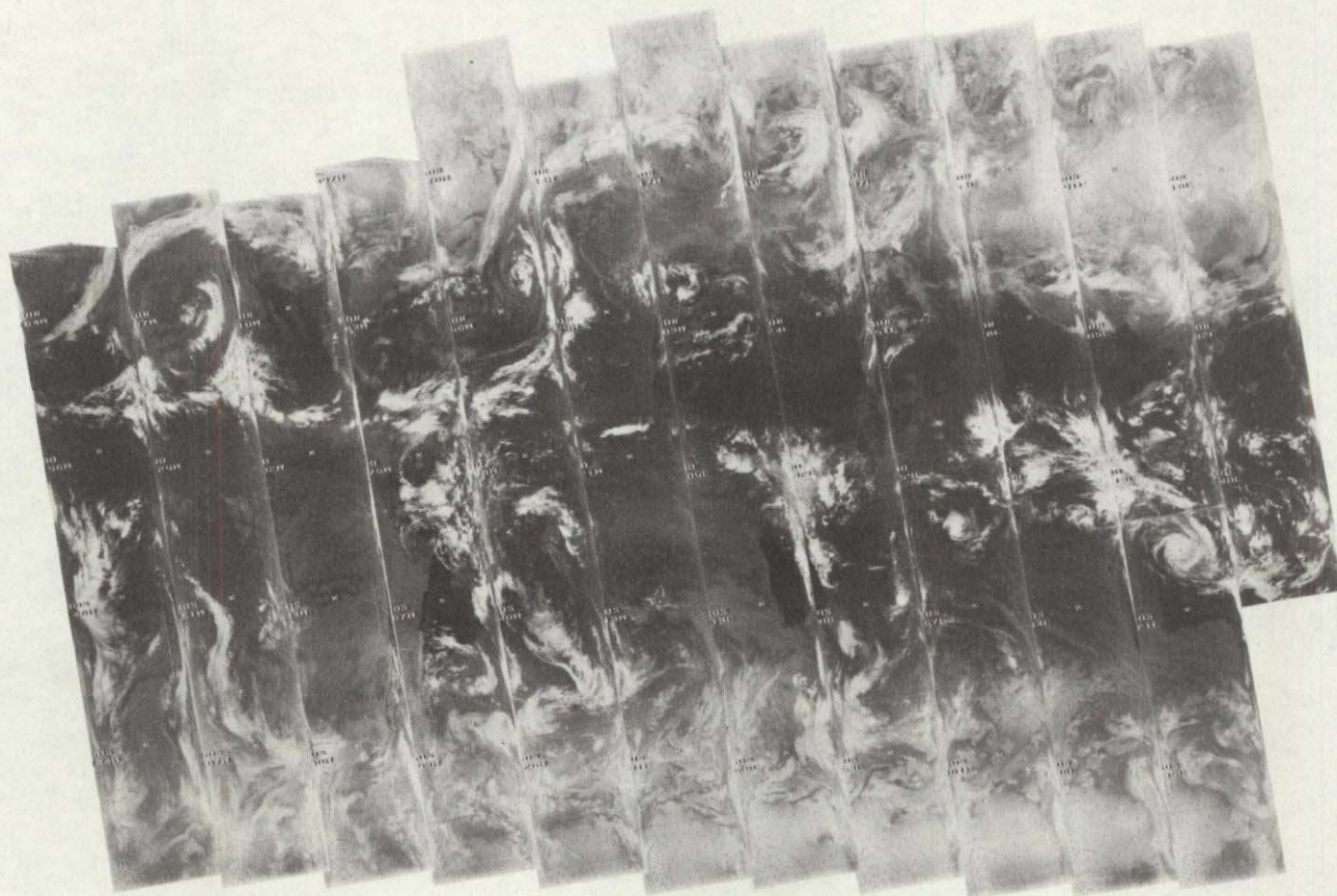
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2382 2381 2380 2379 2378 2377 2376 2375 2374 2373 2372 2371 2370

6 DECEMBER 1975

6.7 μm



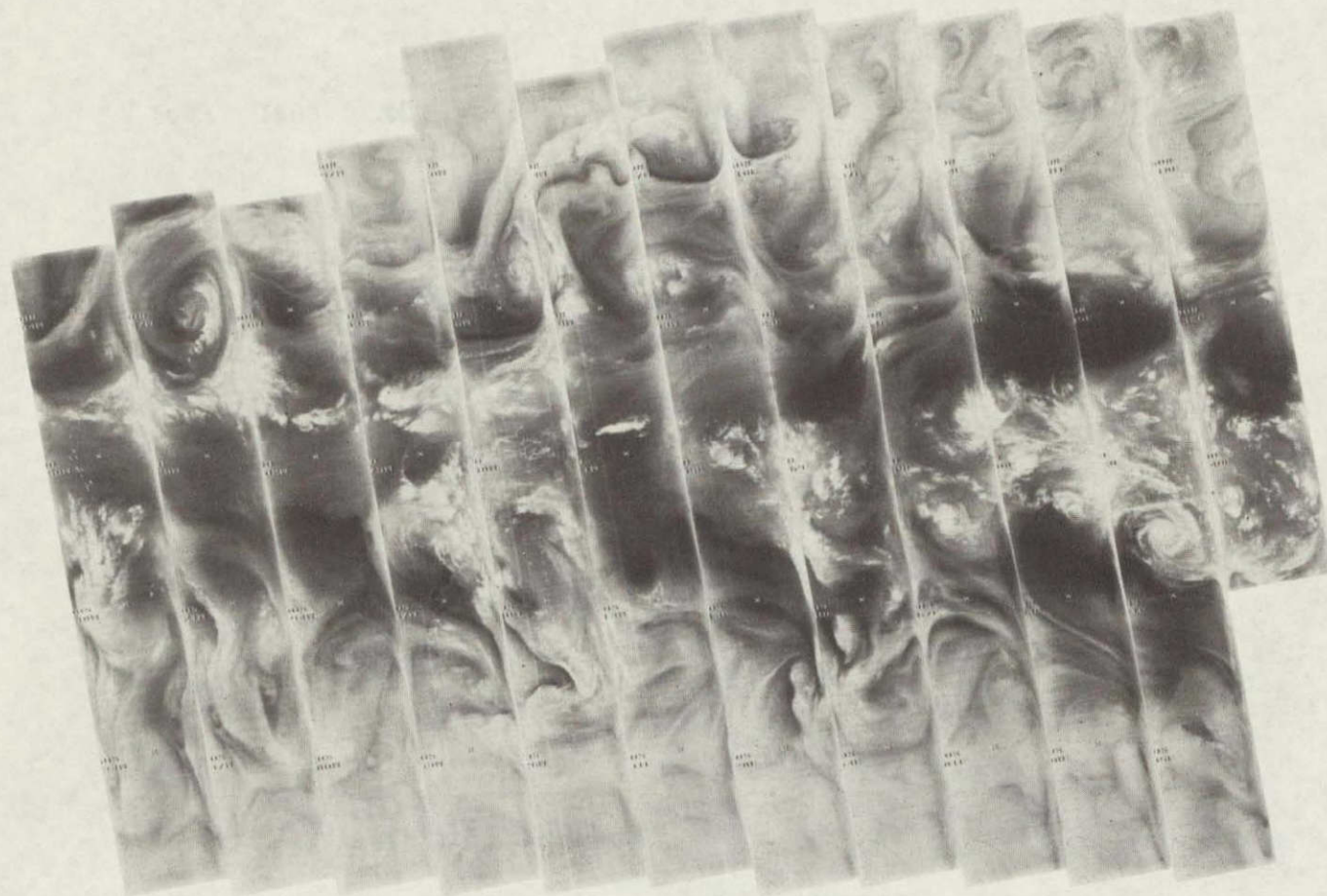
2396 2395 2394 2393 2392 2391 2390 2389 2388 2387 2386 2385 2384 2383

7 DECEMBER 1975

11.5 μm

4-202

— 4-203

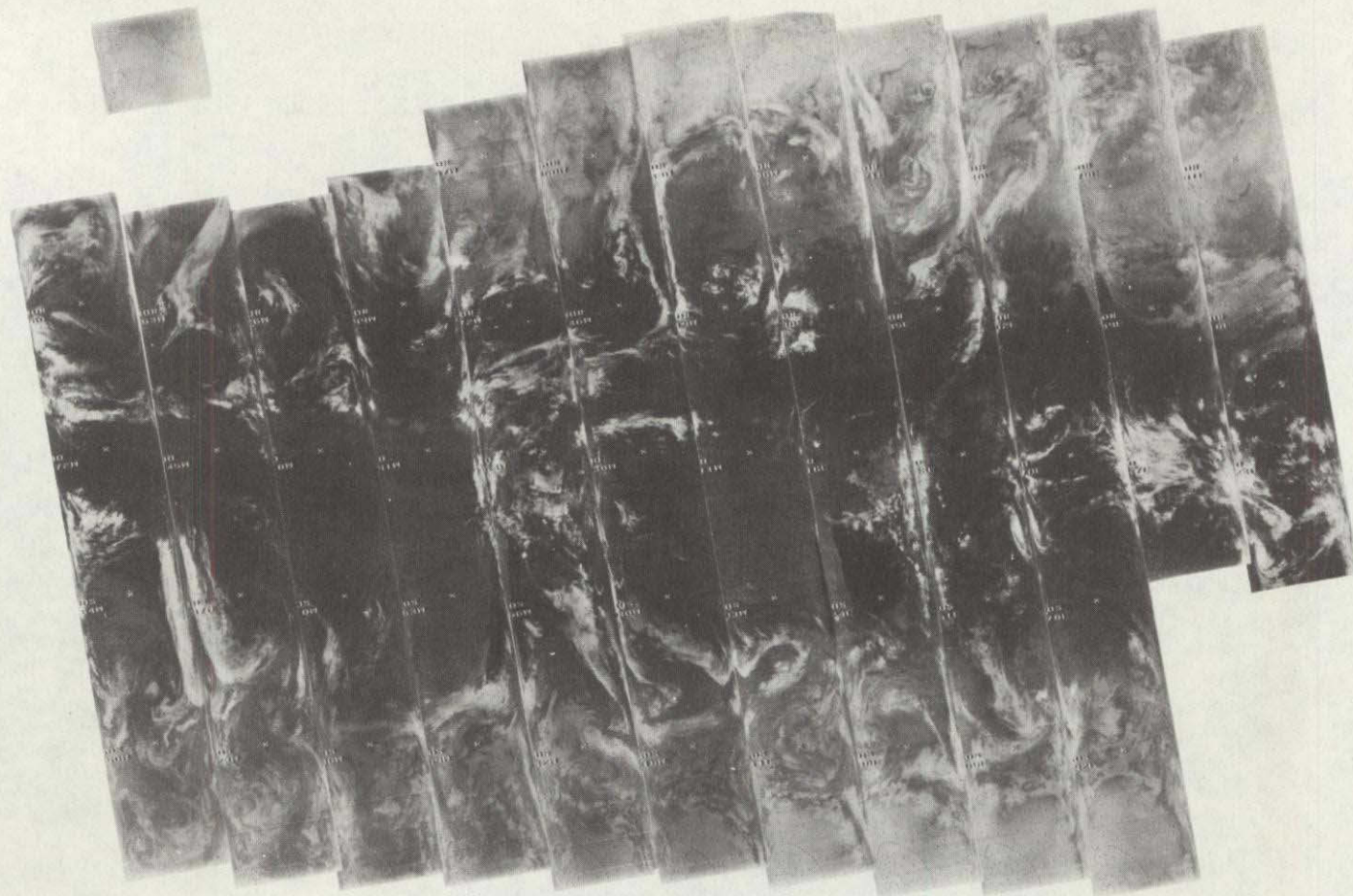


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2396 2395 2394 2393 2392 2391 2390 2389 2388 2387 2386 2385 2384 2383

7 DECEMBER 1975

6.7 μm



2409 2408 2407 2406 2405 2404 2403 2402 2401 2400 2399 2398 2397

8 DECEMBER 1975

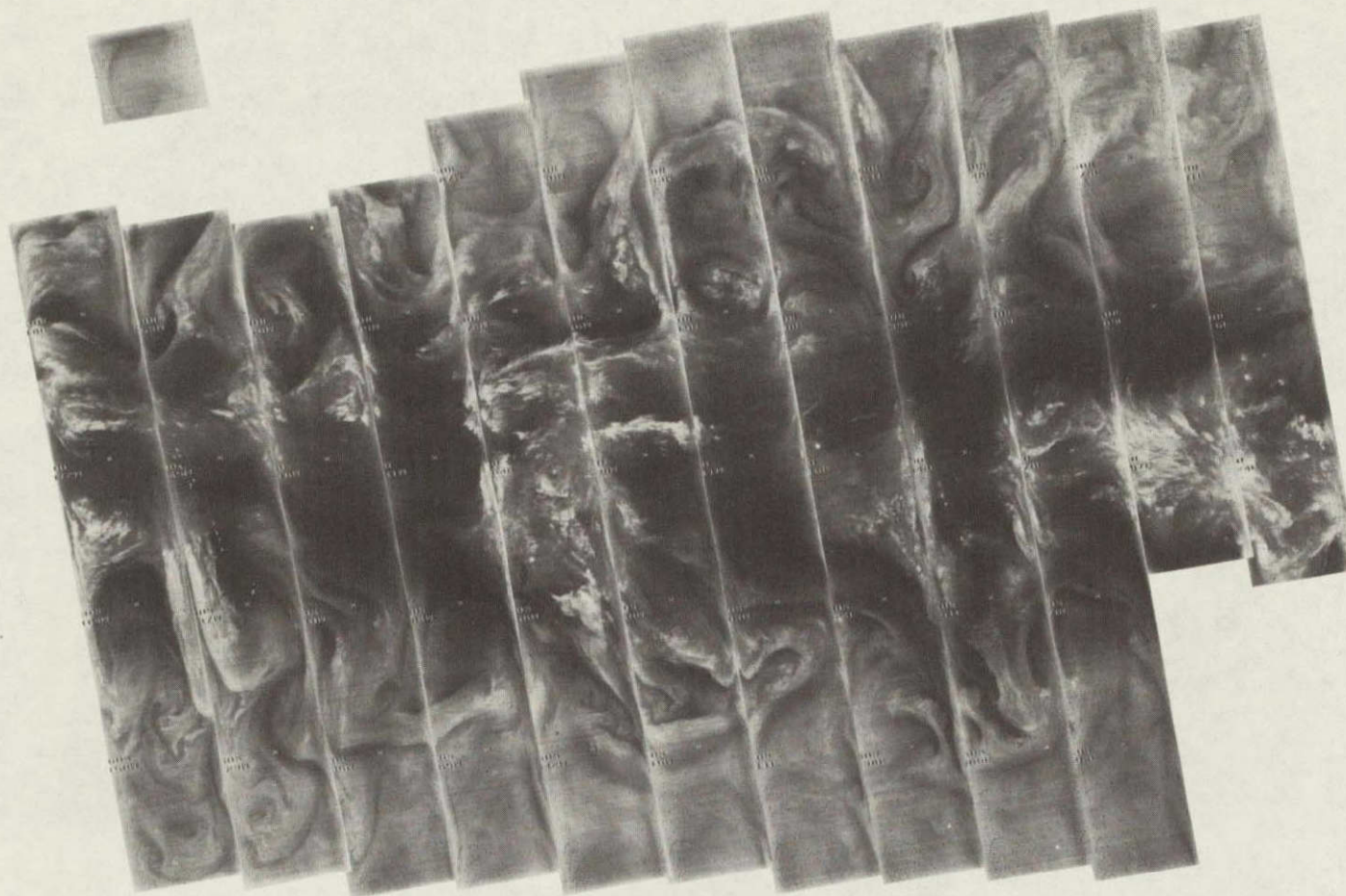
11.5 μm

4-204

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4-205

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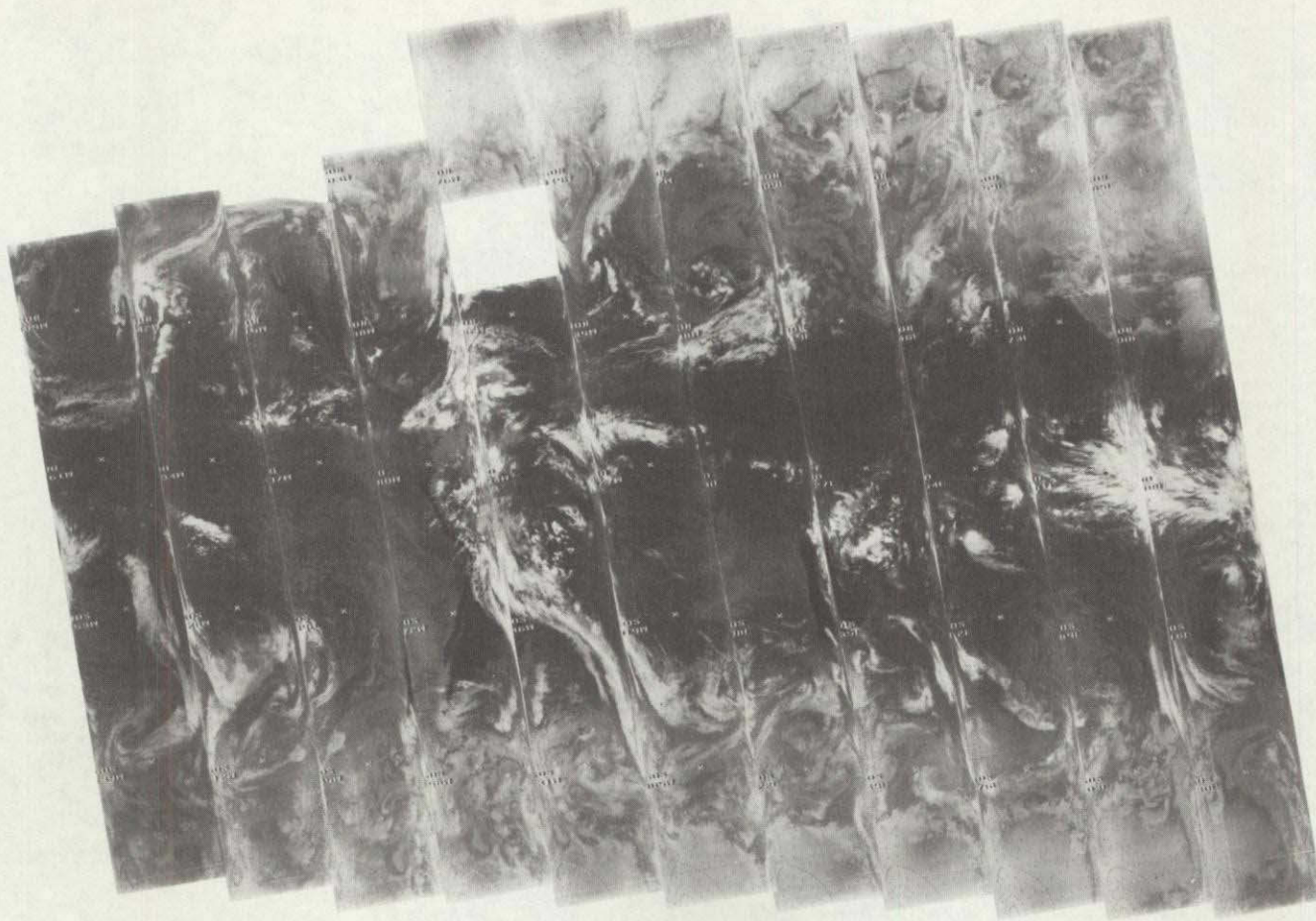


2409 2408 2407 2406 2405 2404 2403 2402 2401 2400 2399 2398 2397

8 DECEMBER 1975

6.7 μm

4-206

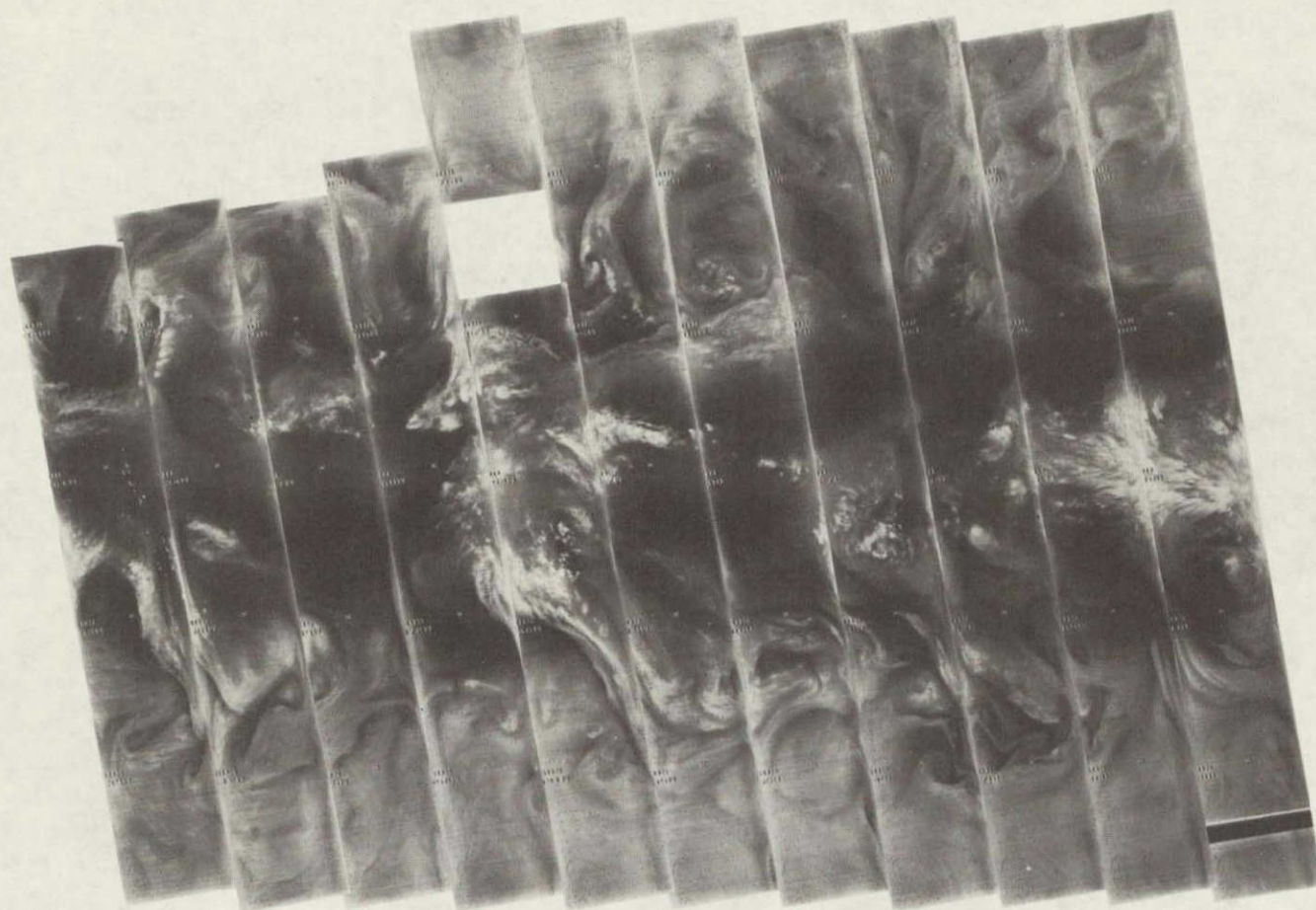


2422 2421 2420 2419 2418 2417 2416 2415 2414 2413 2412 2411 2410

9 DECEMBER 1975

11.5 μm

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2422 2421 2420 2419 2418 2417 2416 2415 2414 2413 2412 2411 2410

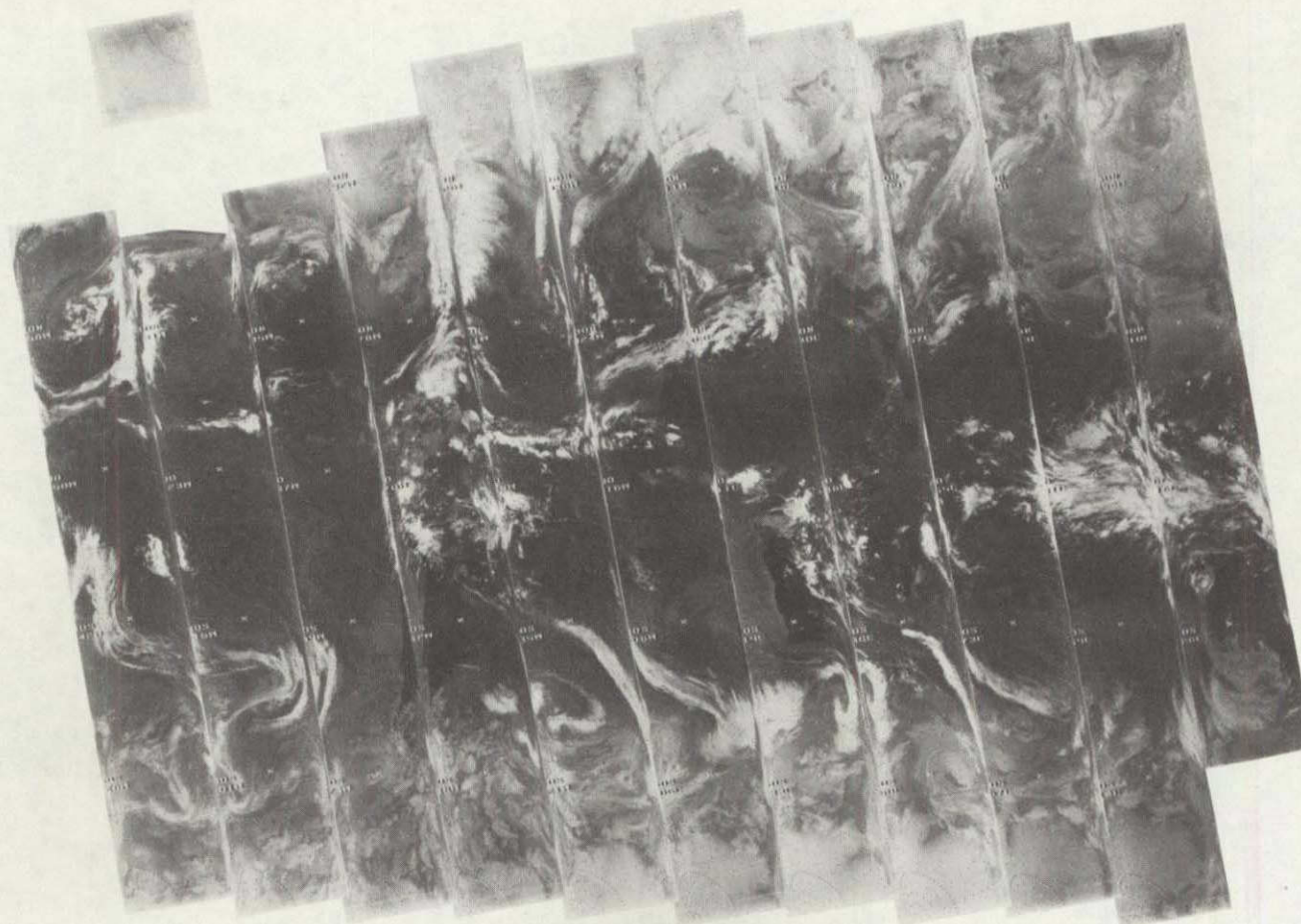
9 DECEMBER 1975

6.7 μ m

4-207

4-208

L



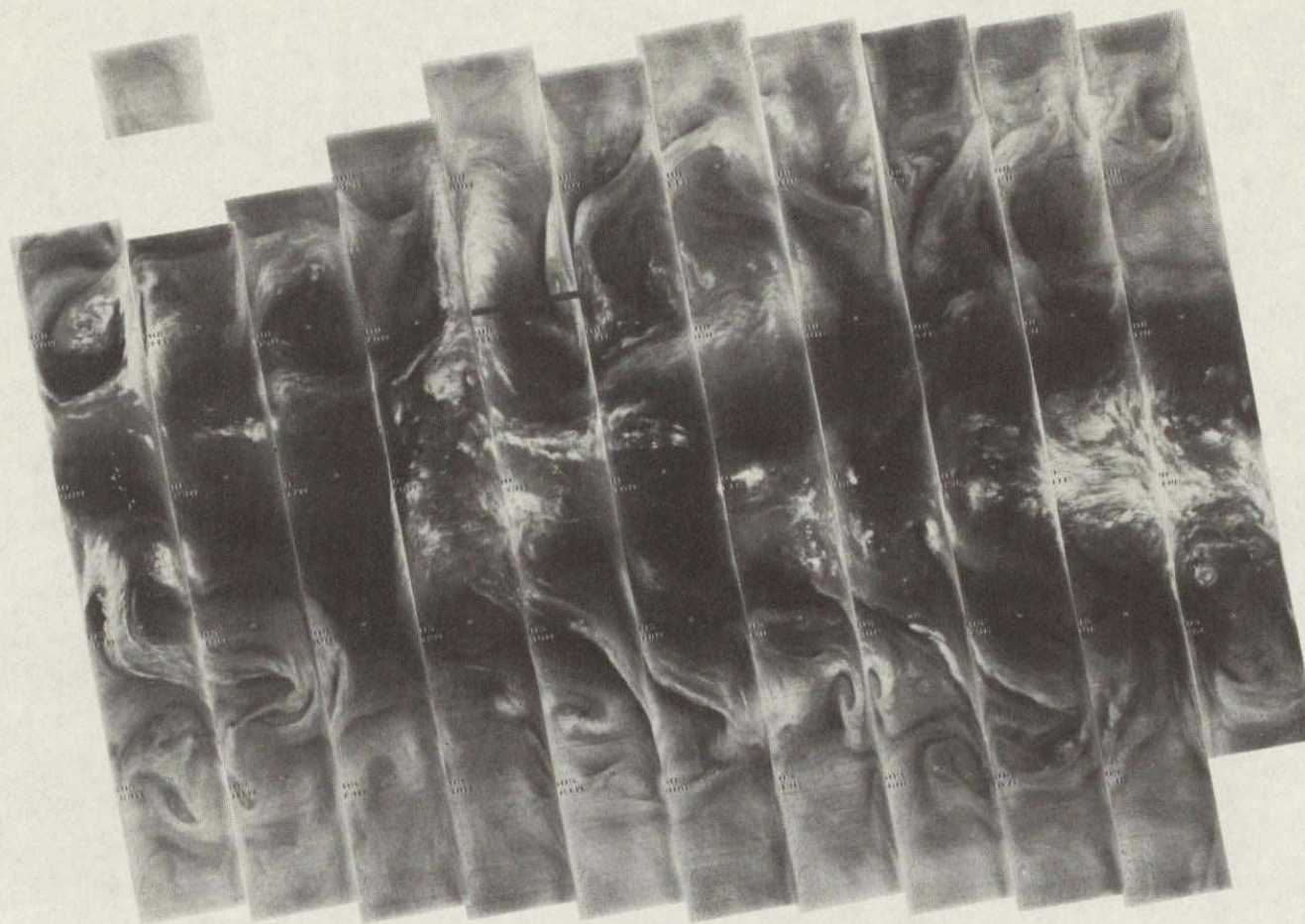
2436 2435 2434 2433 2432 2431 2430 2429 2428 2427 2426 2425 2424 2423

10 DECEMBER 1975

11.5 μm

T

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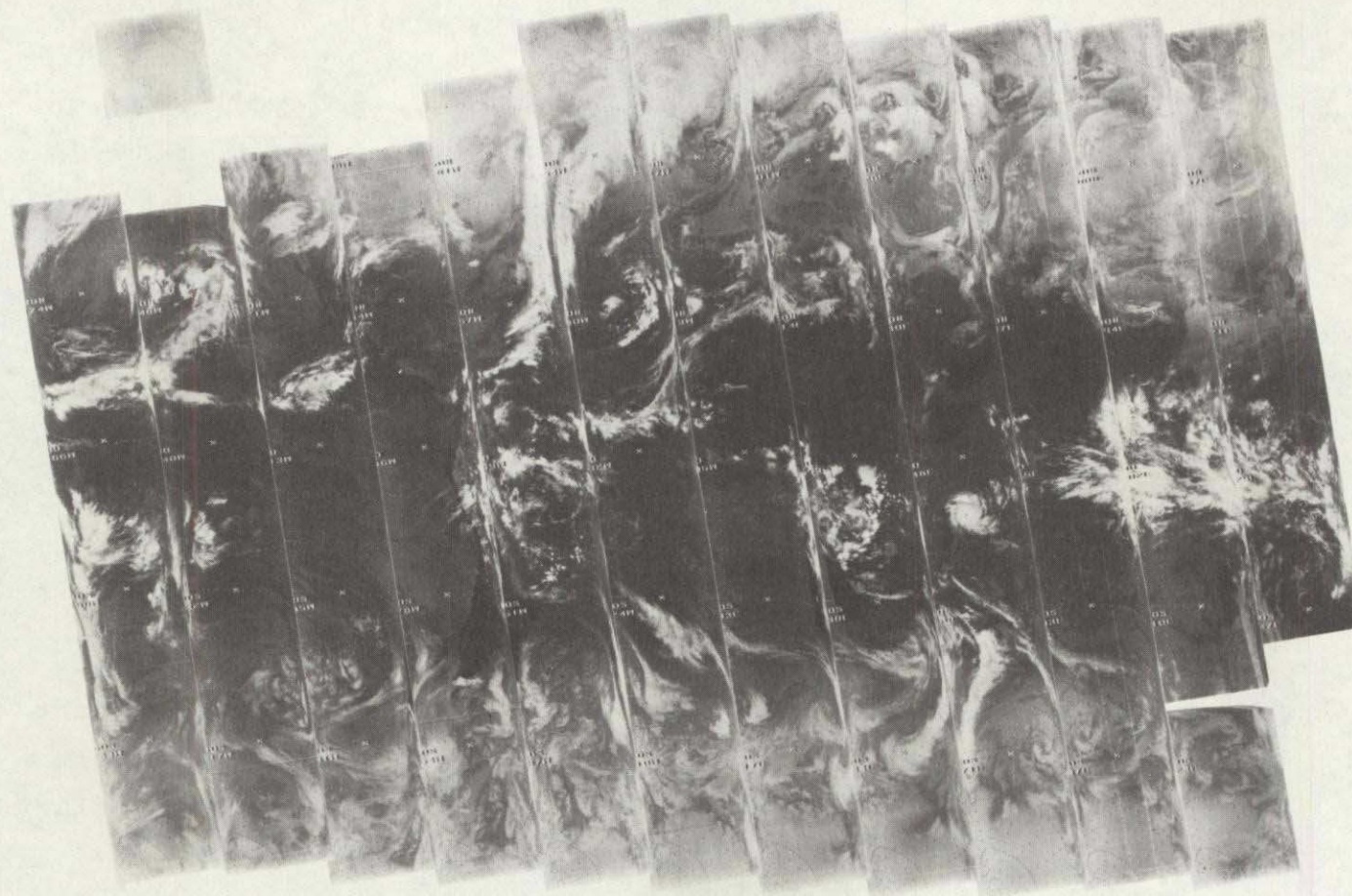
2436 2435 2434 2433 2432 2431 2430 2429 2428 2427 2426 2425 2424 2423

10 DECEMBER 1975

6.7 μm

4-209

4-210

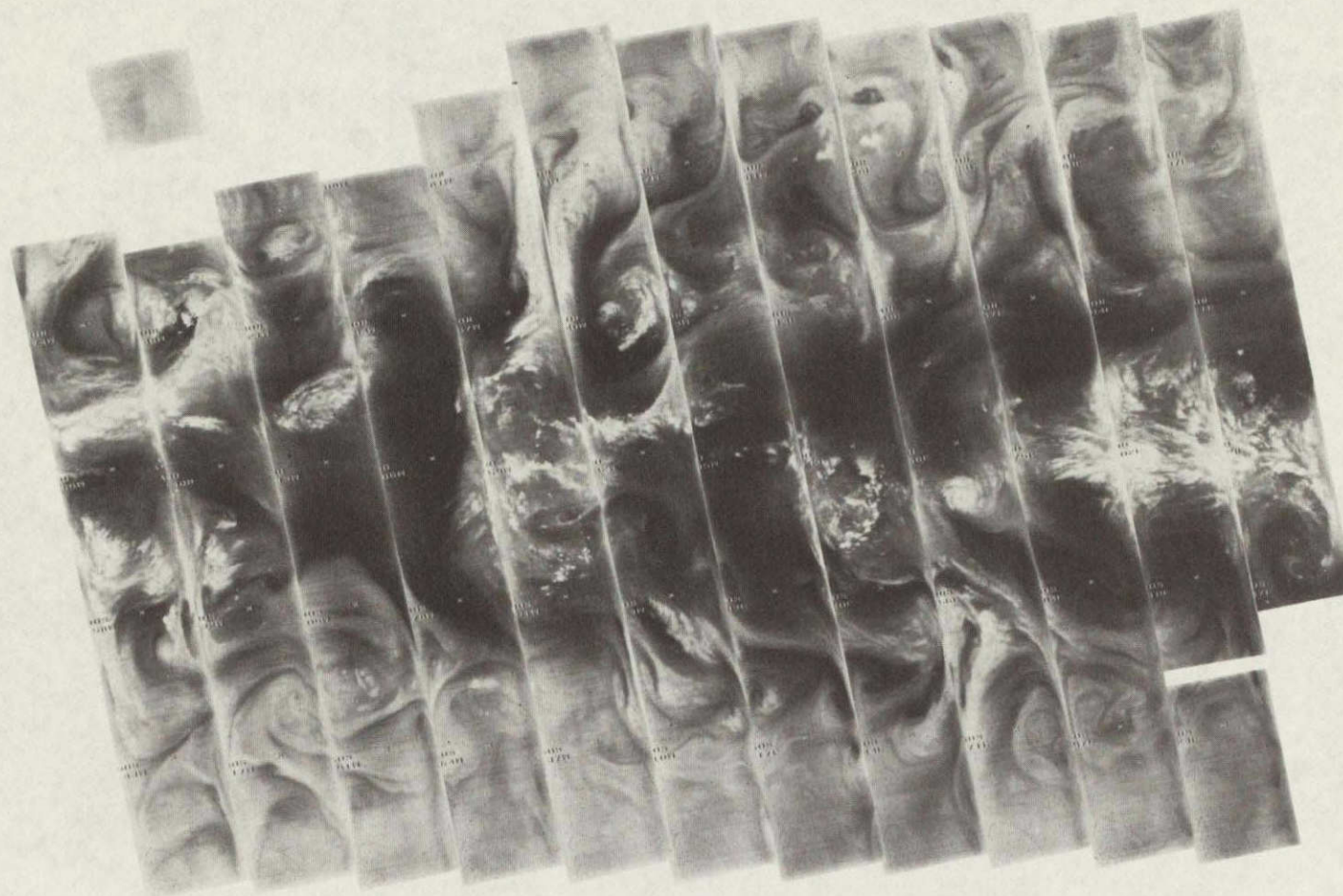


2449 2448 2447 2446 2445 2444 2443 2442 2441 2440 2439 2438 2437

11 DECEMBER 1975

11.5 μ m

4-211



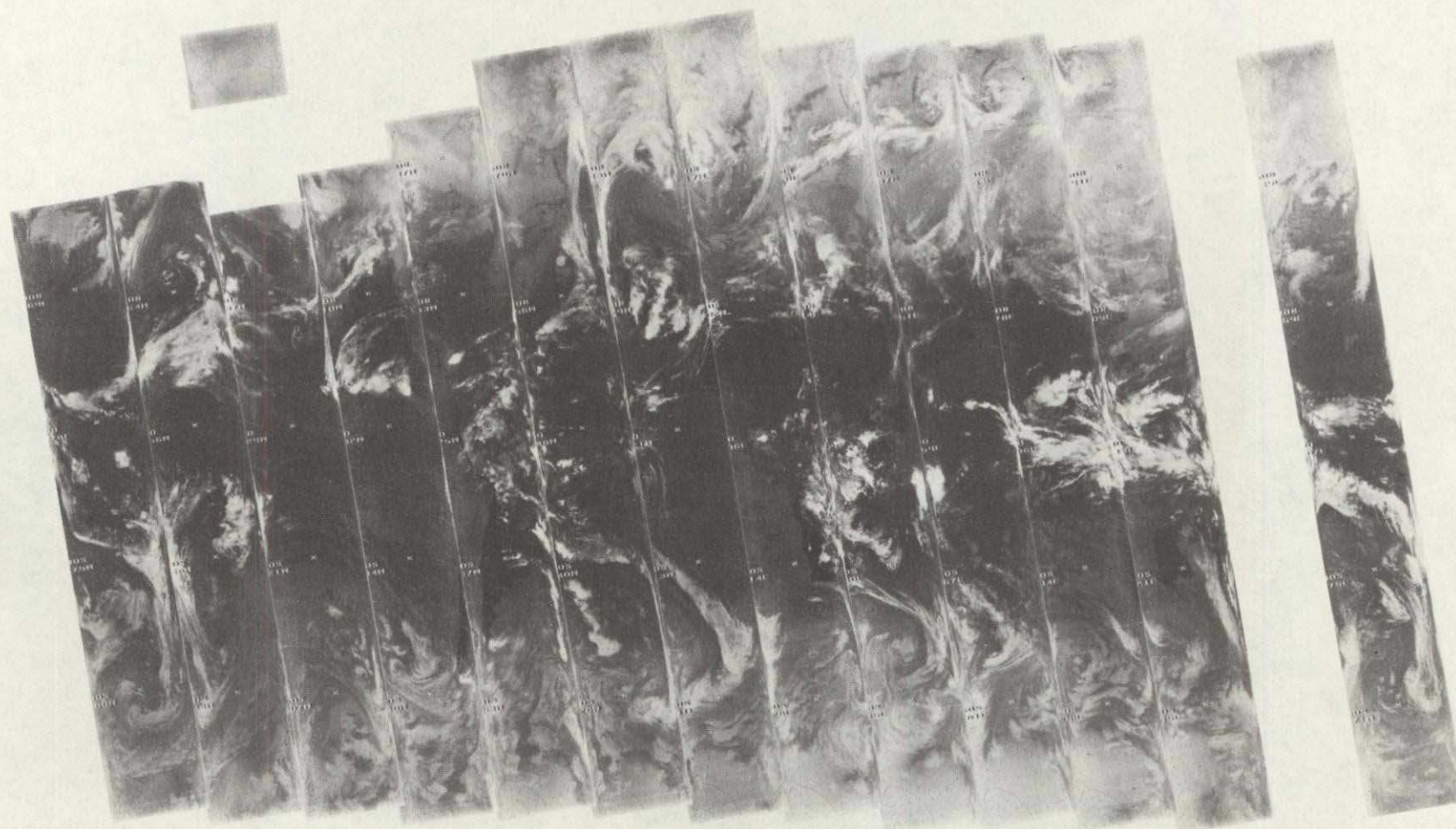
2449 2448 2447 2446 2445 2444 2443 2442 2441 2440 2439 2438 2437

11 DECEMBER 1975

6.7 μm

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4-212



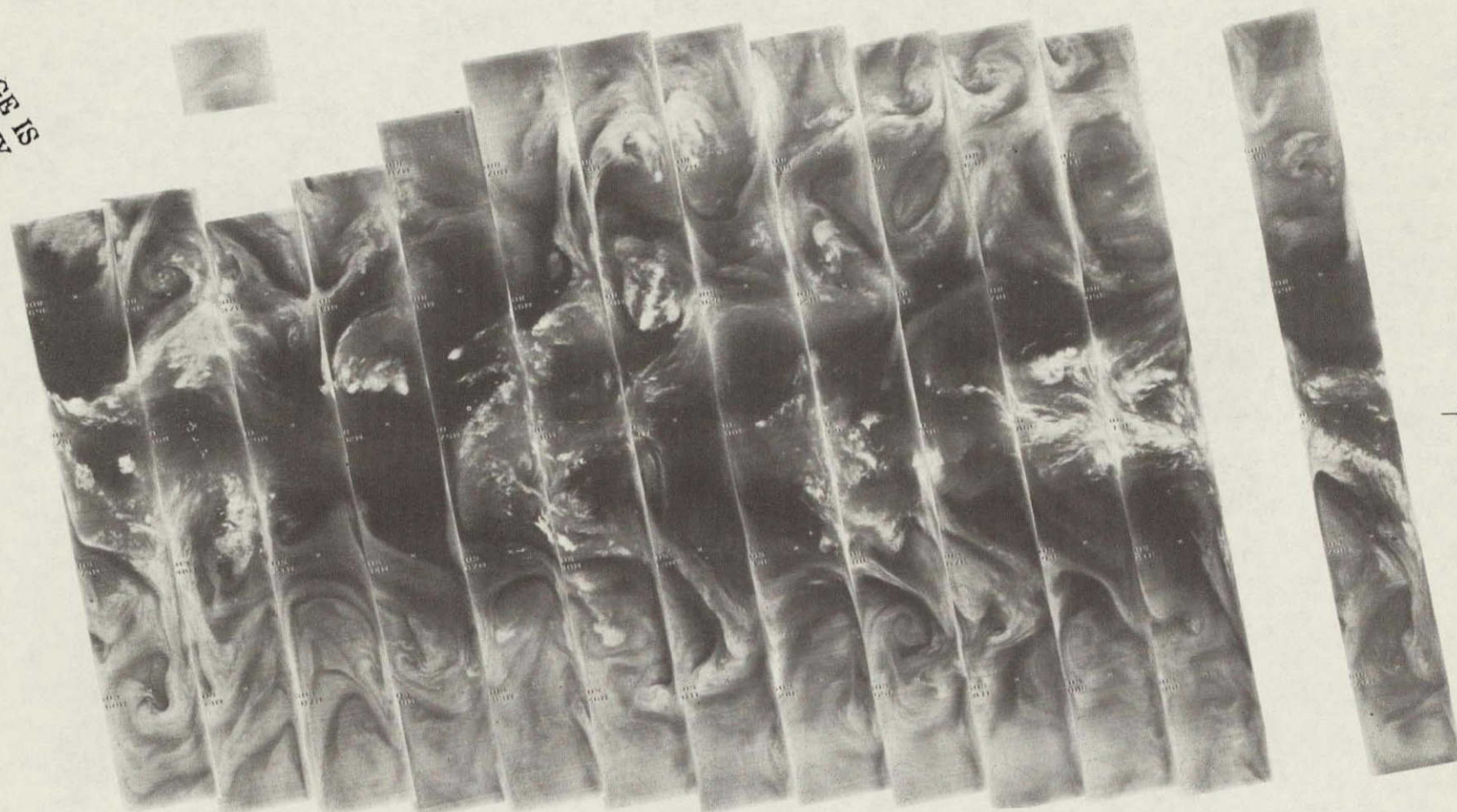
2463 2462 2461 2460 2459 2458 2457 2456 2455 2454 2453 2452 2451 2450

12 DECEMBER 1975

11.5 μm

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4-213



2463 2462 2461 2460 2459 2458 2457 2456 2455 2454 2453 2452 2451 2450

12 DECEMBER 1975

6.7 μm

4-214

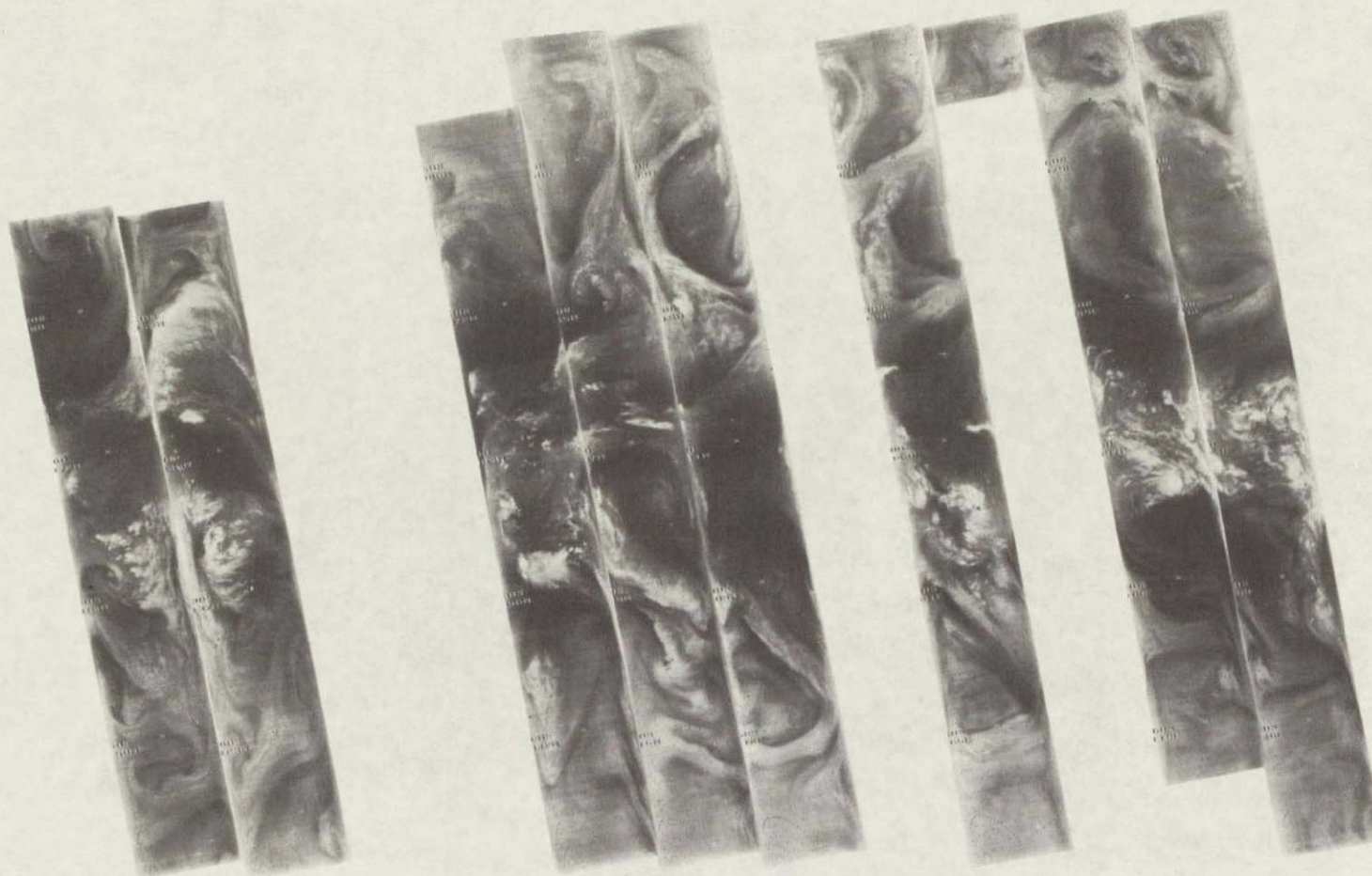


2476 2475 2474 2473 2472 2471 2470 2469 2468 2467 2466 2465 2464

13 DECEMBER 1975

11.5 μ m

C-14



T

T

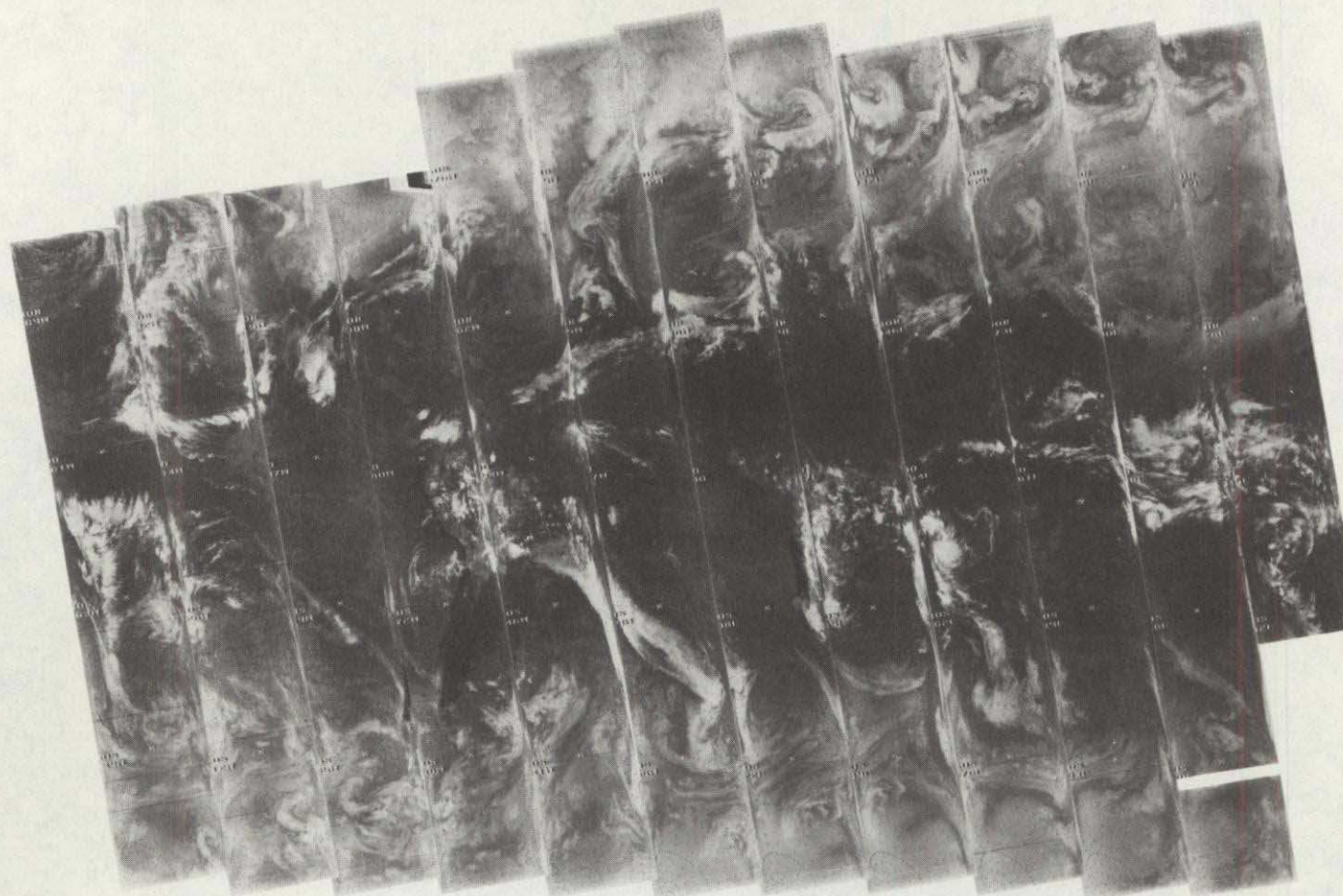
4-215

2476 2475 2474 2473 2472 2471 2470 2469 2468 2467 2466 2465 2464

13 DECEMBER 1975

6.7 μ m

4-216

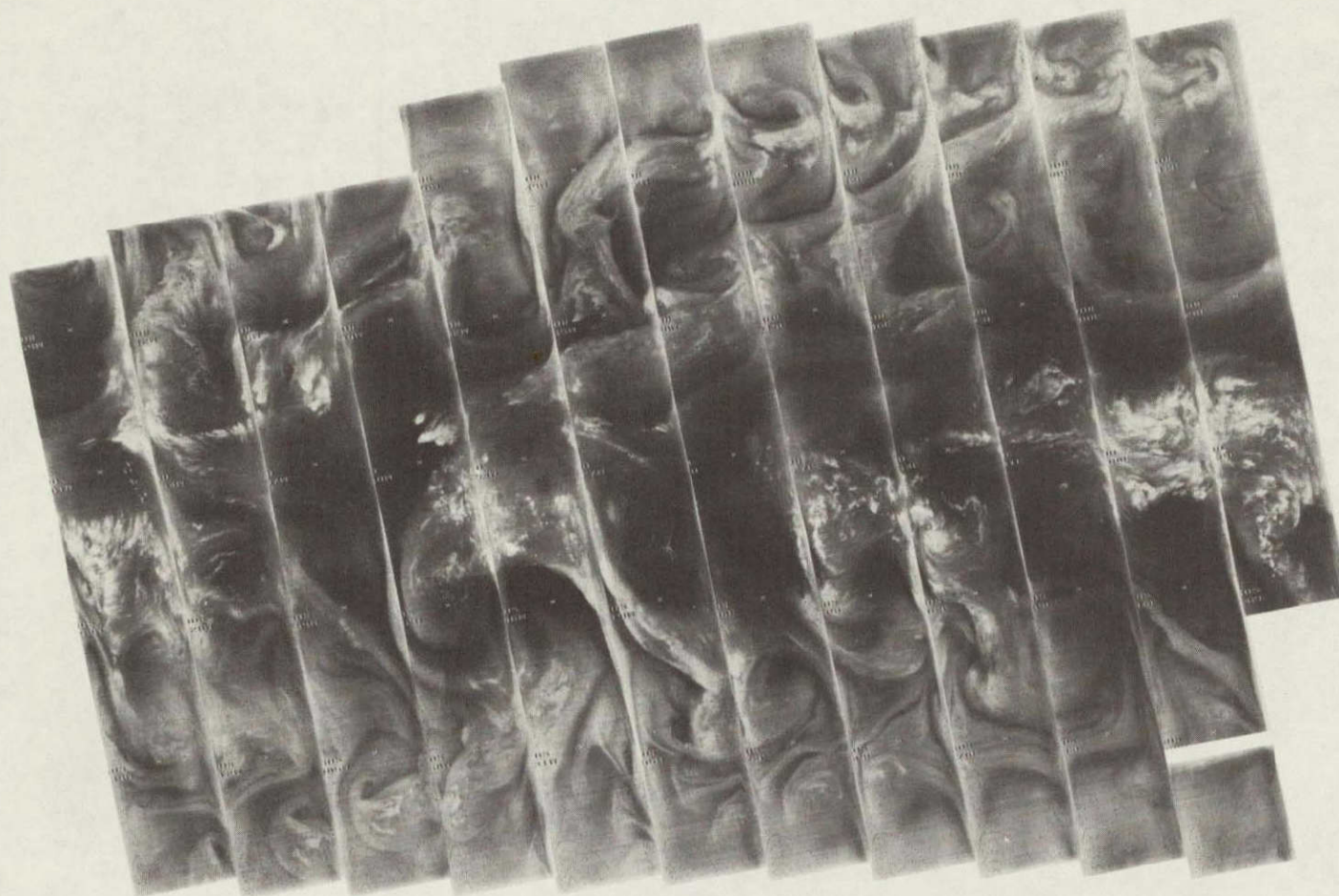


2489 2488 2487 2486 2485 2484 2483 2482 2481 2480 2479 2478 2477

14 DECEMBER 1975

11.5 μ m

4-217

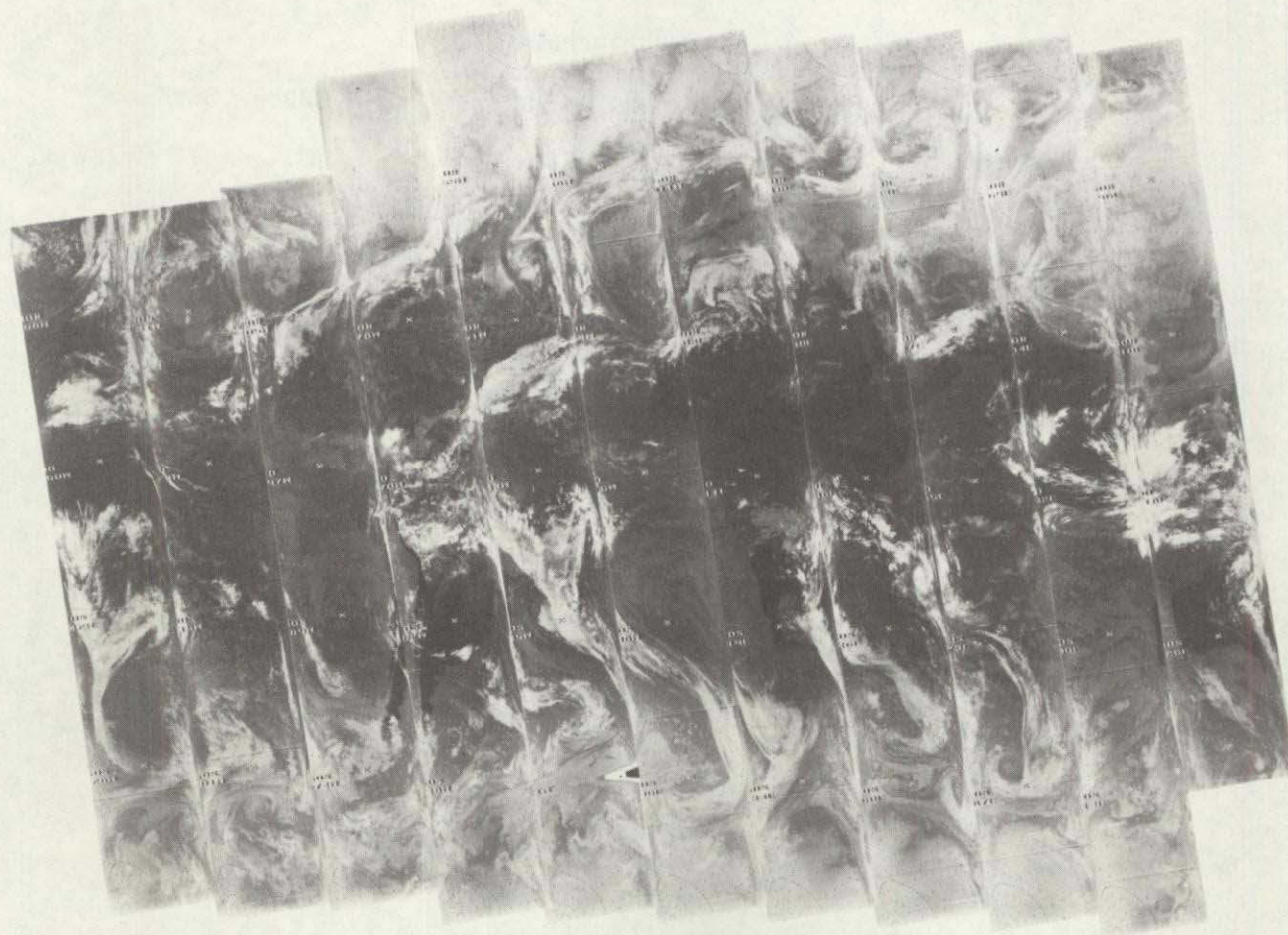


2489 2488 2487 2486 2485 2484 2483 2482 2481 2480 2479 2478 2477

14 DECEMBER 1975

6.7 μm

ORIGINAL PAGE IS
OF POOR QUALITY

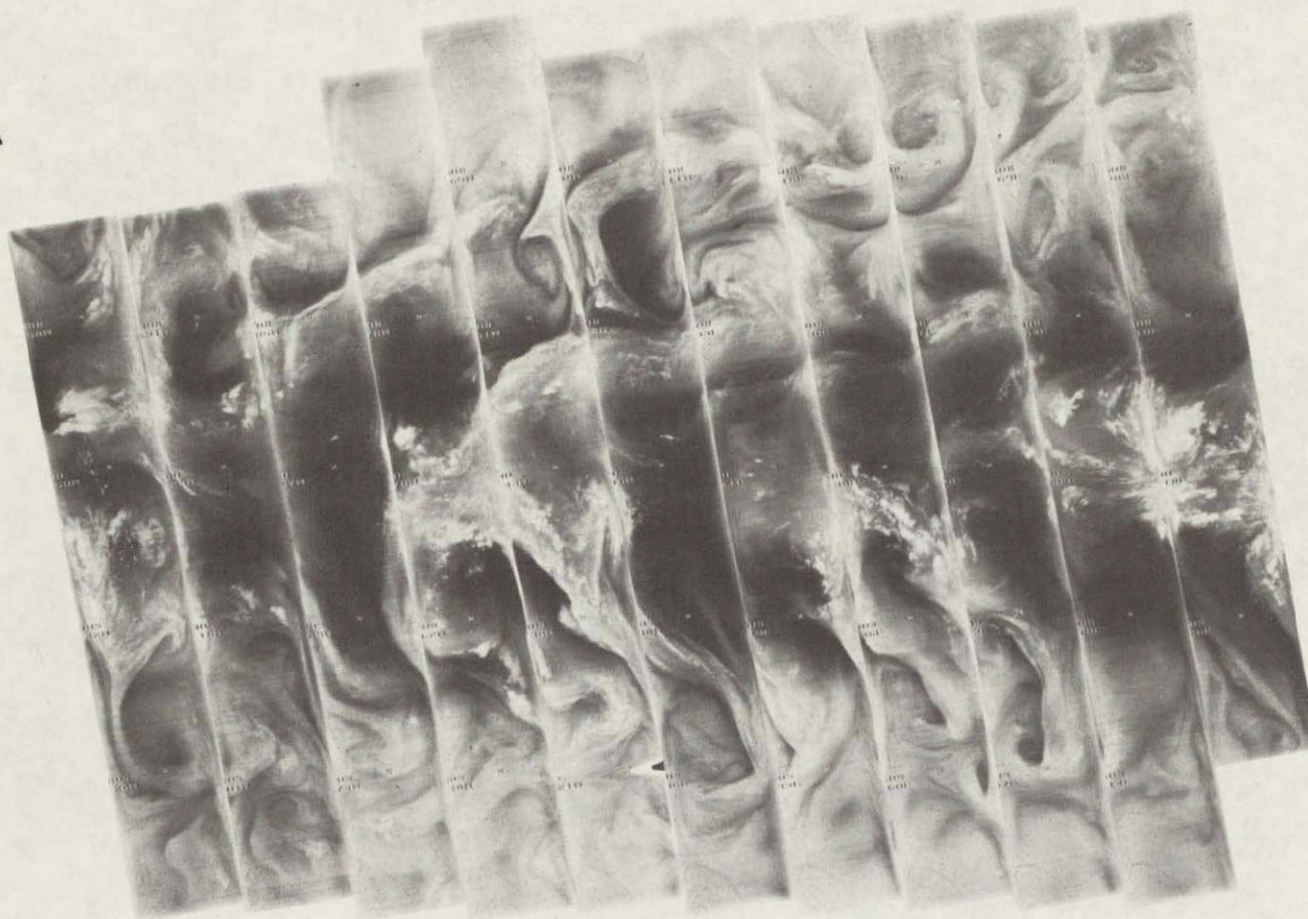


2503 2502 2501 2500 2499 2498 2497 2496 2495 2494 2493 2492 2491 2490

15 DECEMBER 1975

11.5 μm

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2503 2502 2501 2500 2499 2498 2497 2496 2495 2494 2493 2492 2491 2490

15 DECEMBER 1975

6.7 μ m

4-219

4-220

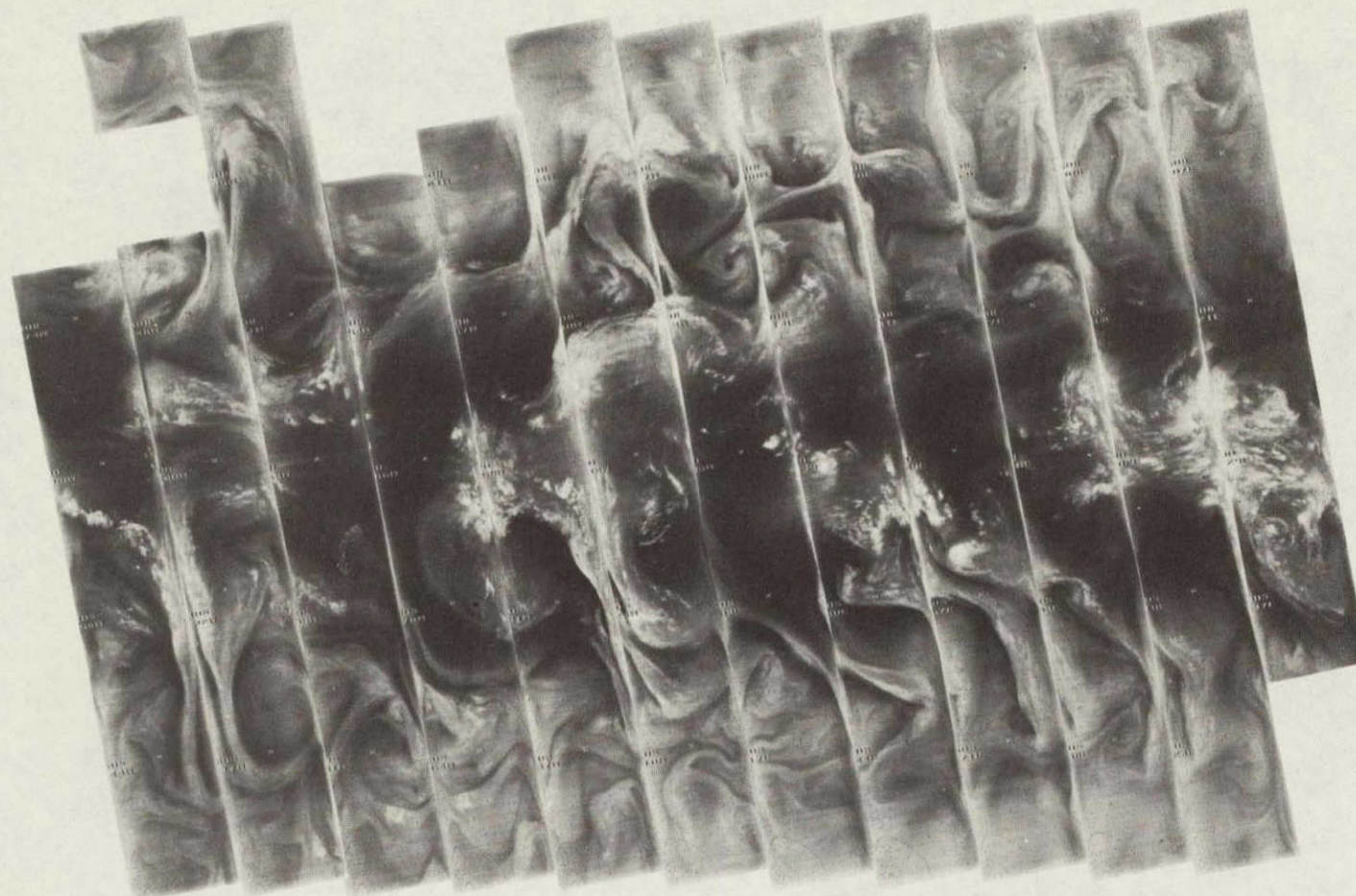


2516 2515 2514 2513 2512 2511 2510 2509 2508 2507 2506 2505 2504

16 DECEMBER 1975

11.5 μm

4-221



2516 2515 2514 2513 2512 2511 2510 2509 2508 2507 2506 2505 2504

16 DECEMBER 1975

6.7 μm

4-222

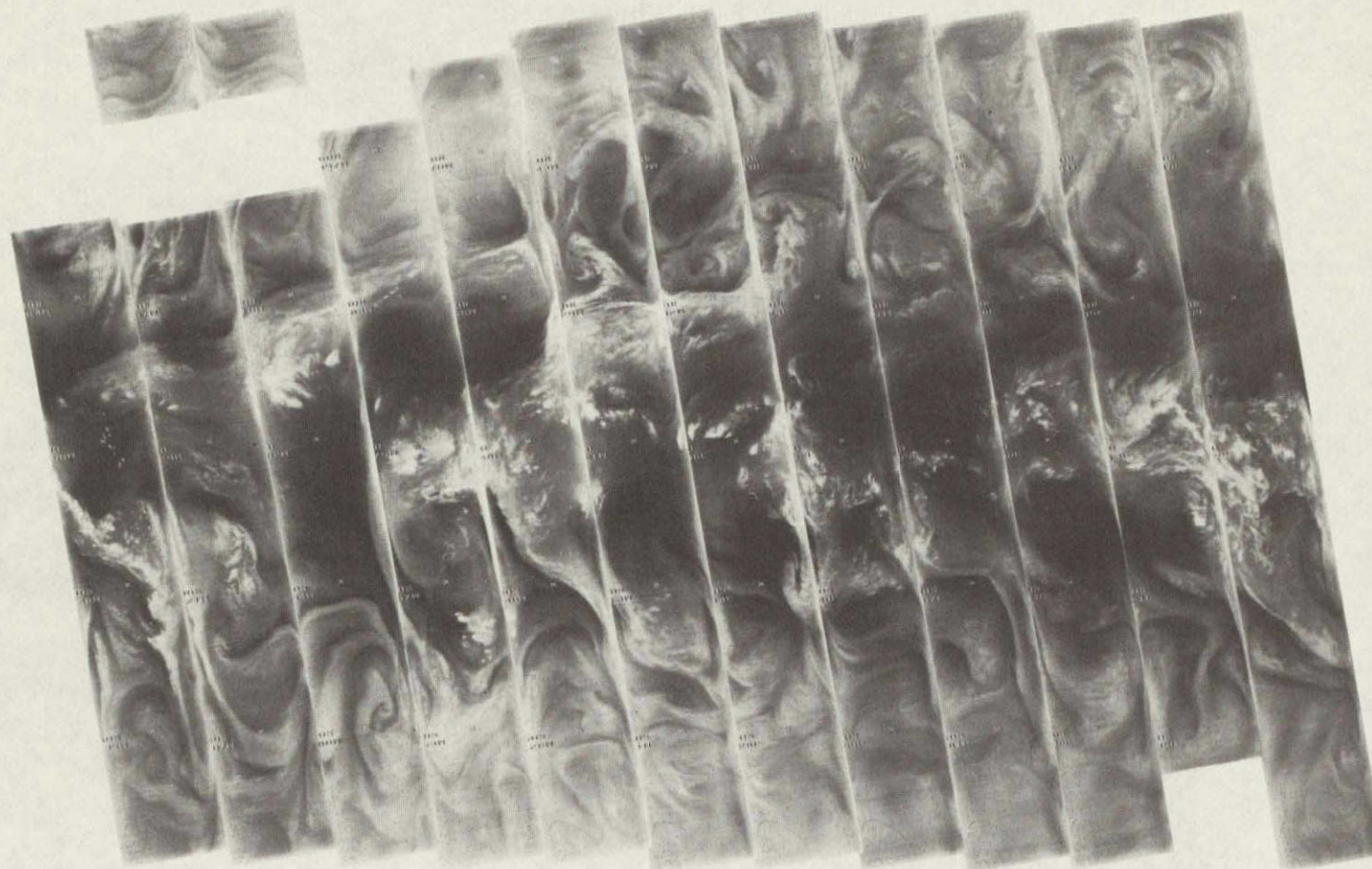


2530 2529 2528 2527 2526 2525 2524 2523 2522 2521 2520 2519 2518 2517

17 DECEMBER 1975

11.5 μm

4-223



2530 2529 2528 2527 2526 2525 2524 2523 2522 2521 2520 2519 2518 2517

17 DECEMBER 1975

6.7 μ m

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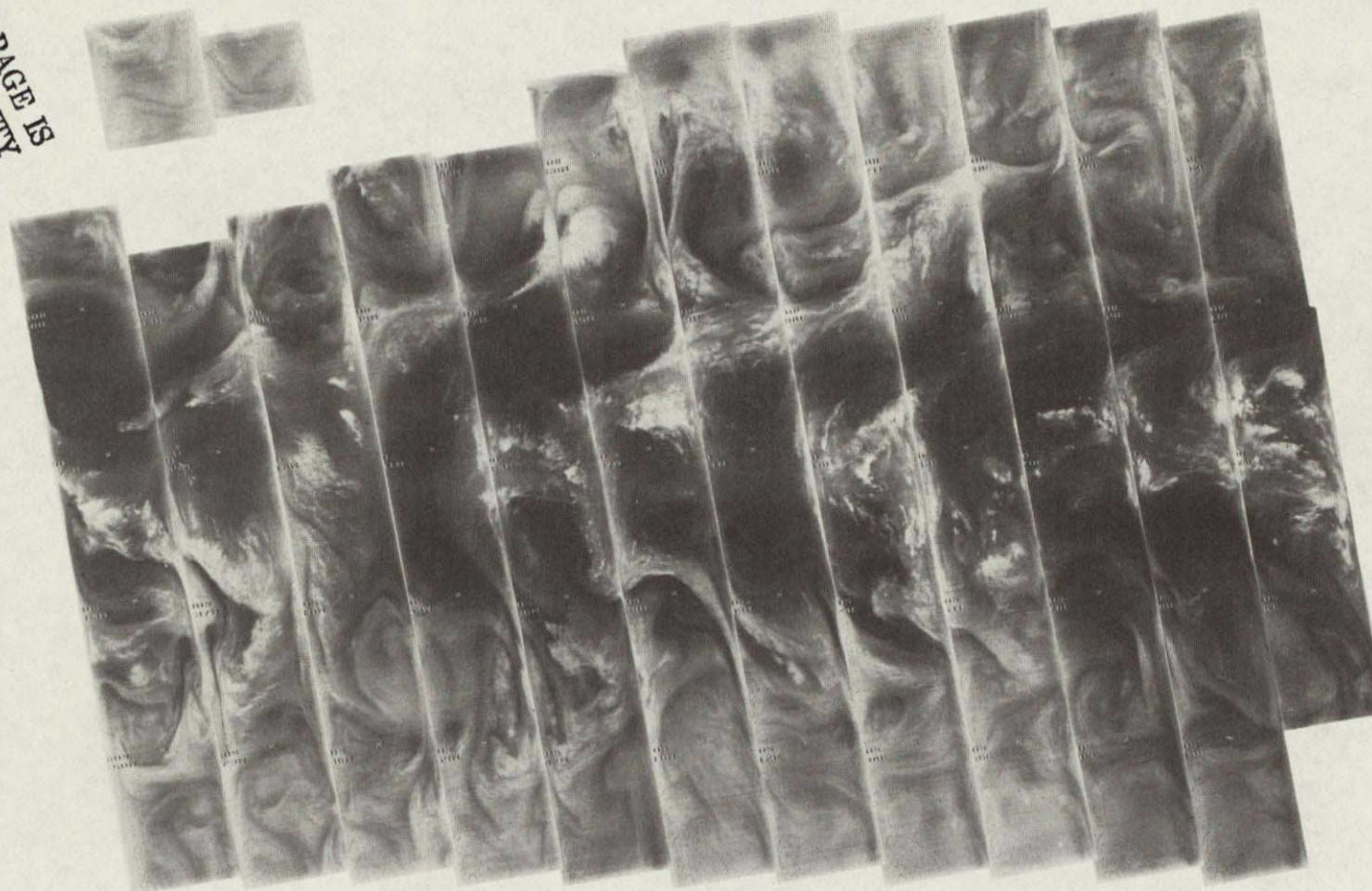
2543 2542 2541 2540 2539 2538 2537 2536 2535 2534 2533 2532 2531

18 DECEMBER 1975

11.5 μ m

4-224

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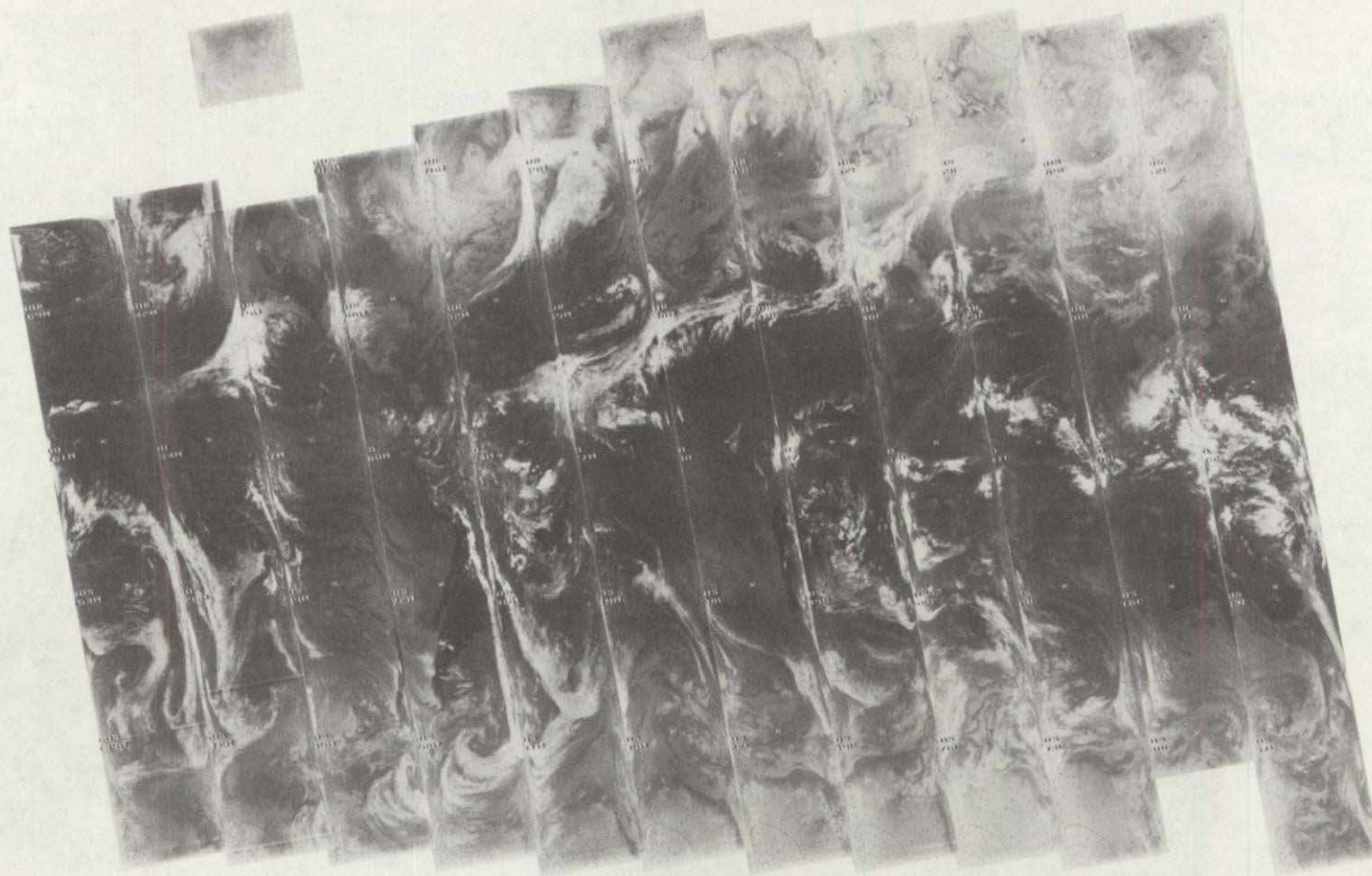
2543 2542 2541 2540 2539 2538 2537 2536 2535 2534 2533 2532 2531

18 DECEMBER 1975

6.7 μm

4-225

4-226

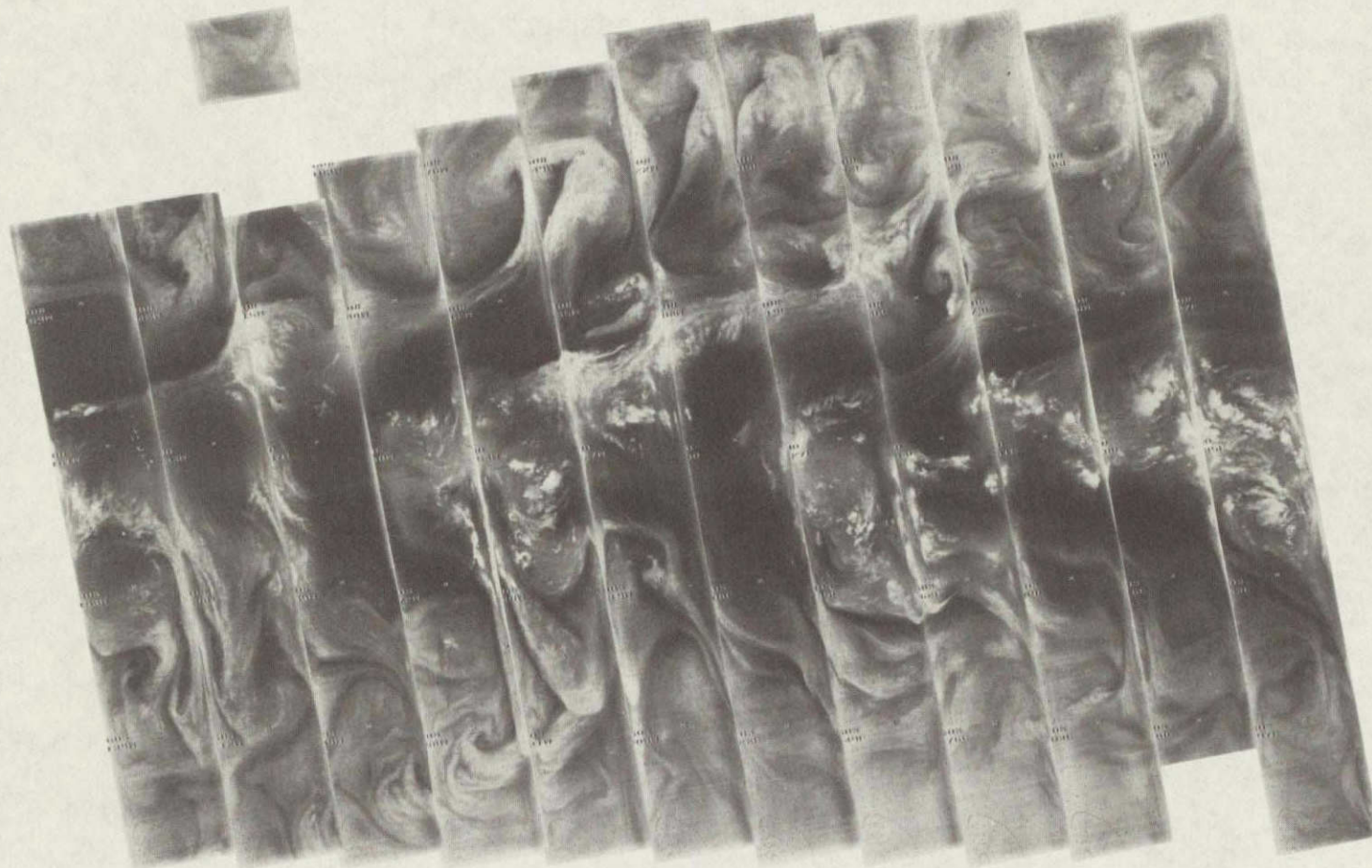


2556 2555 2554 2553 2552 2551 2550 2549 2548 2547 2546 2545 2544

19 DECEMBER 1975

11.5 μm

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2556 2555 2554 2553 2552 2551 2550 2549 2548 2547 2546 2545 2544

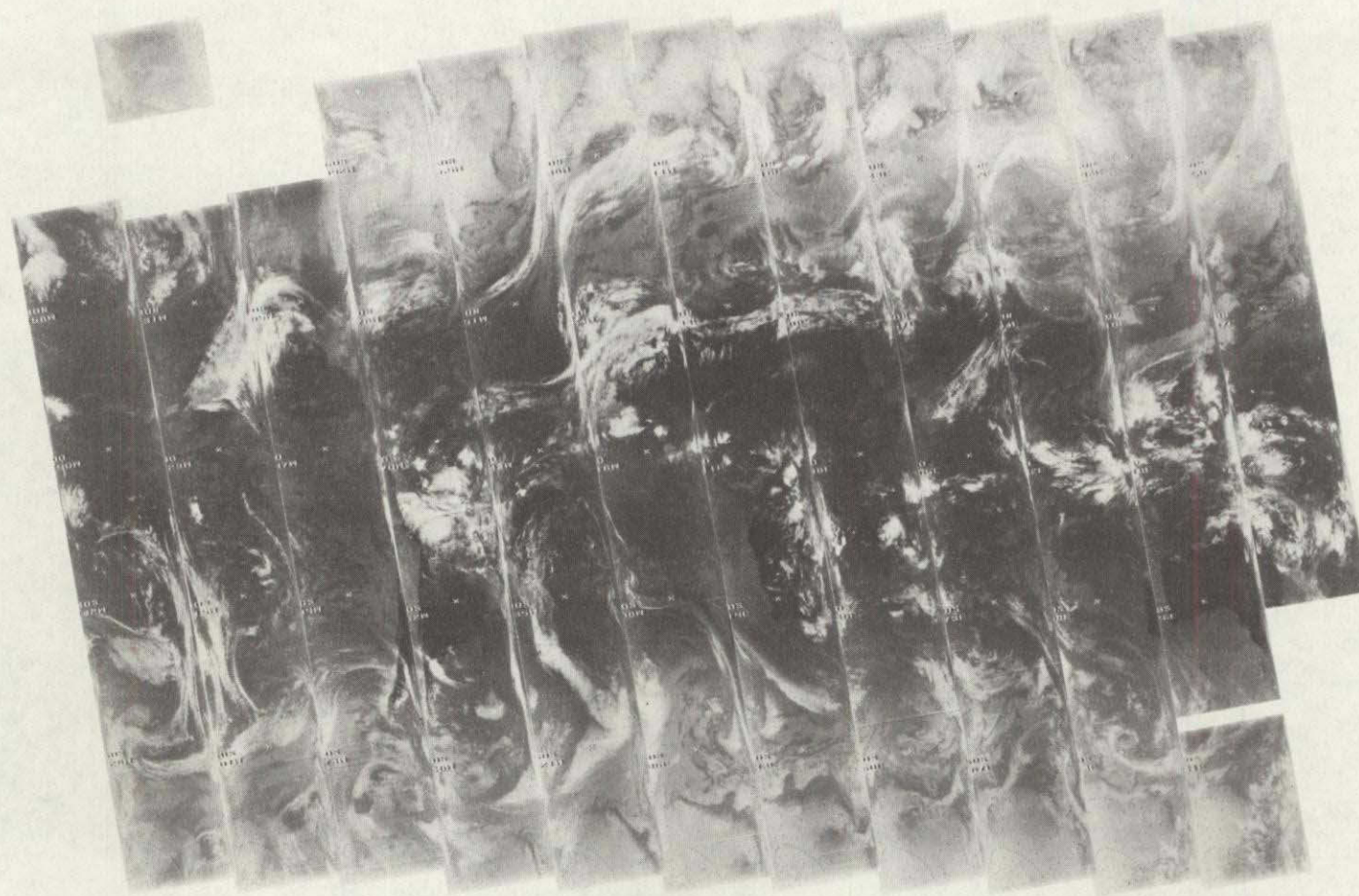
19 DECEMBER 1975

6.7 μm

4-227

↑

4-228

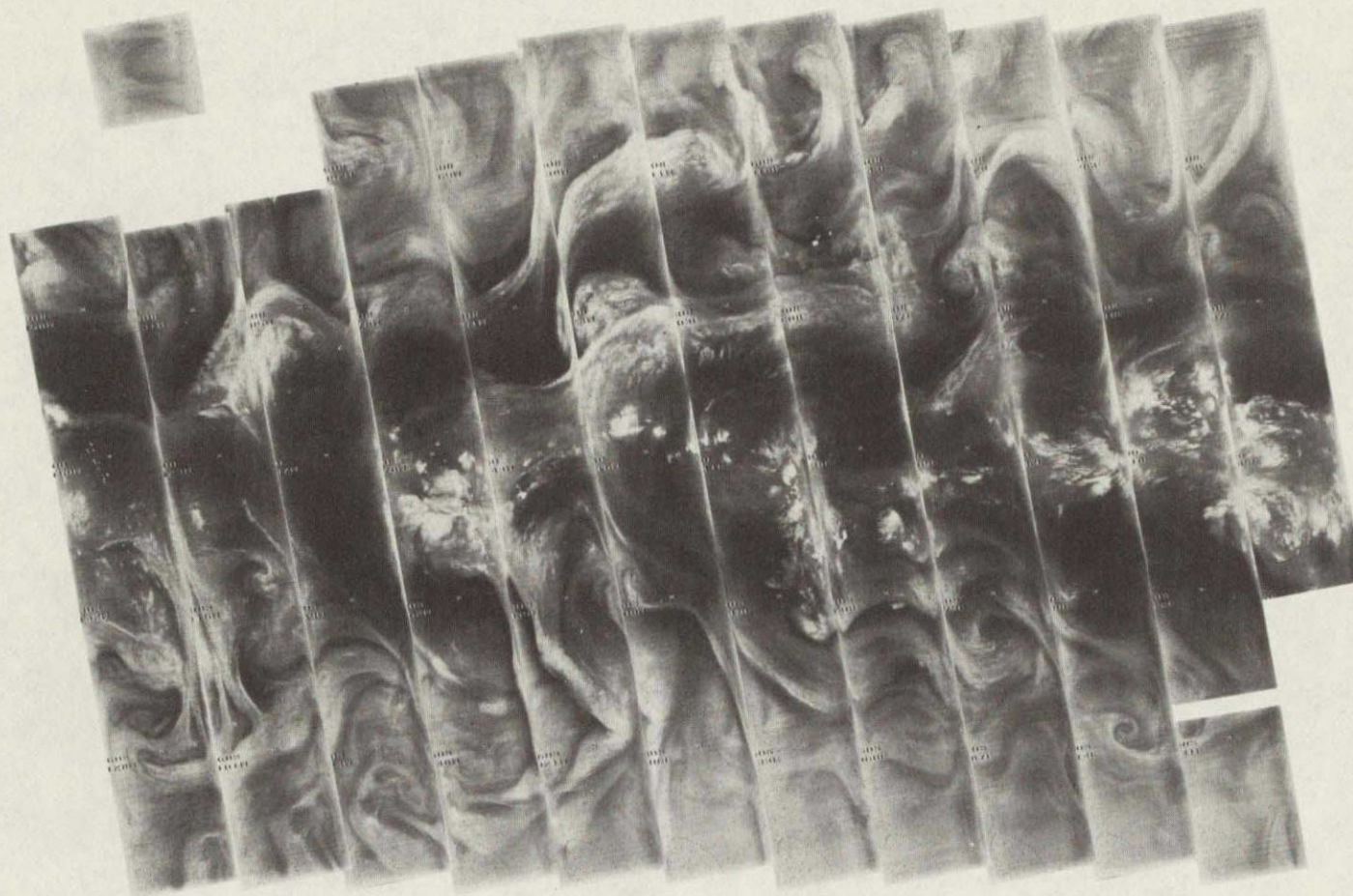


2570 2569 2568 2567 2566 2565 2564 2563 2562 2561 2560 2559 2558 2557

20 DECEMBER 1975

11.5 μ m

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2570 2569 2568 2567 2566 2565 2564 2563 2562 2561 2560 2559 2558 2557

20 DECEMBER 1975

6.7 μm

4-229

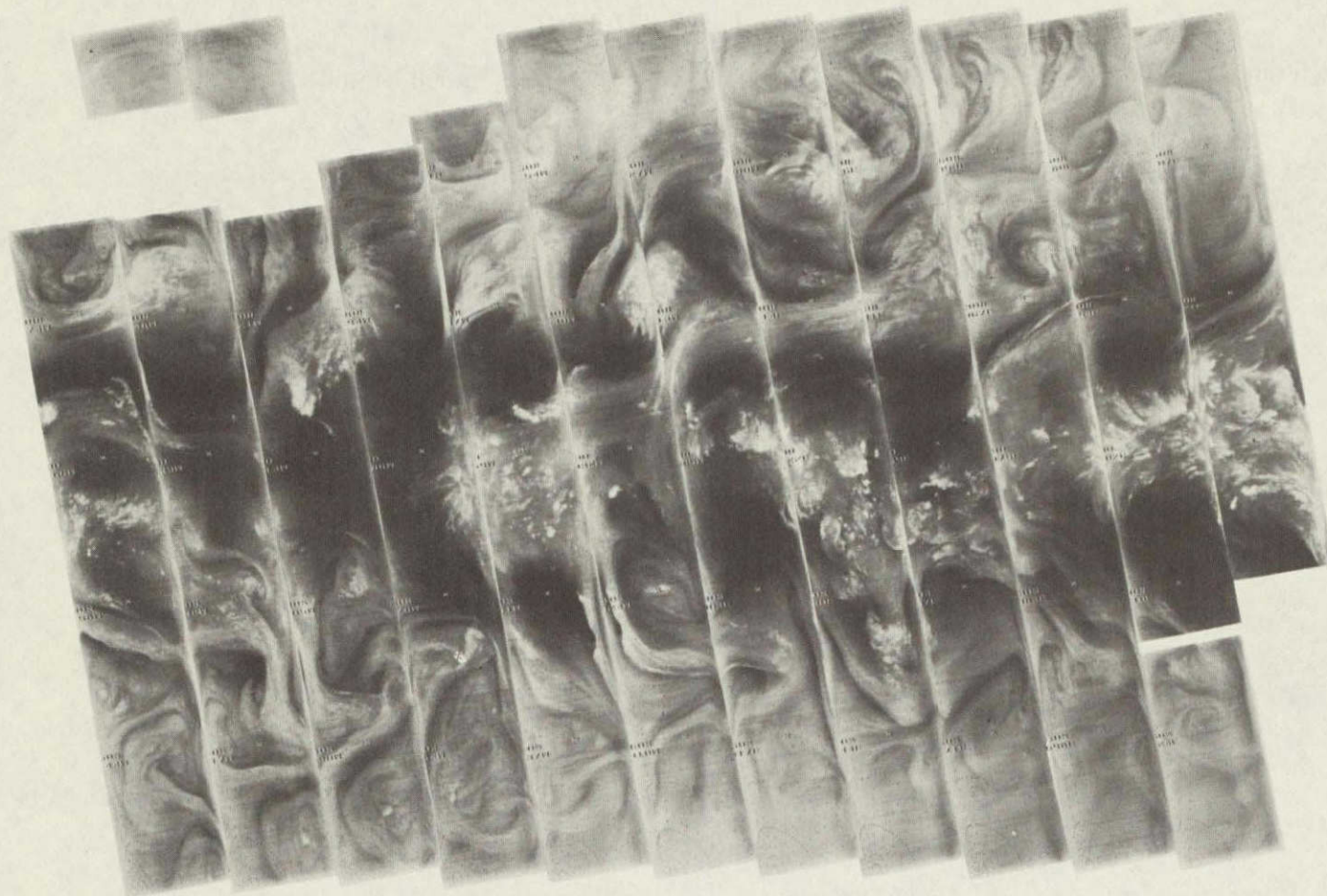
4-230



2583 2582 2581 2580 2579 2578 2577 2576 2575 2574 2573 2572 2571

21 DECEMBER 1975

11.5 μm



2583 2582 2581 2580 2579 2578 2577 2576 2575 2574 2573 2572 2571

21 DECEMBER 1975

6.7 μm

4-231

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4-232

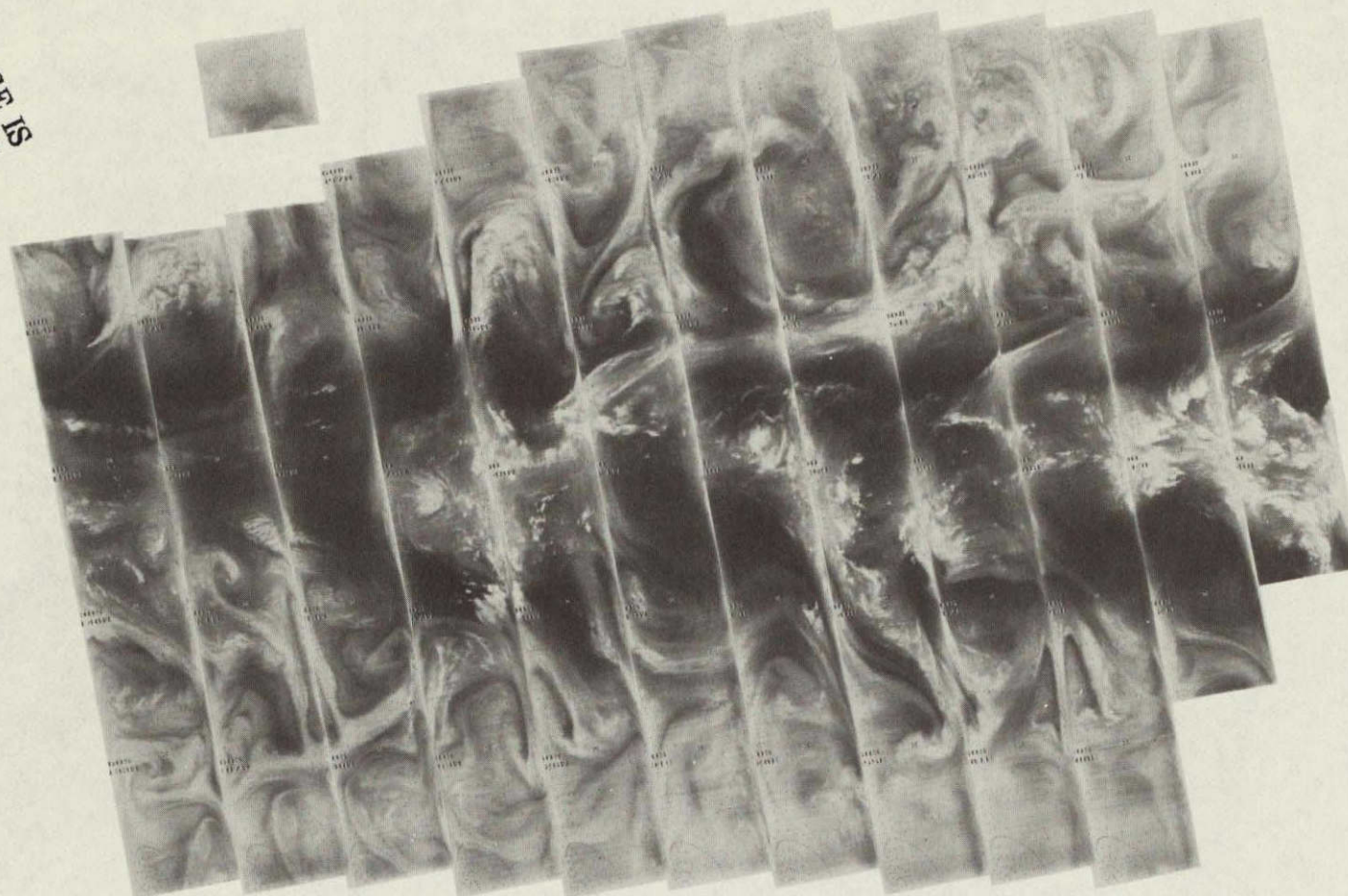


2597 2596 2595 2594 2593 2592 2591 2590 2589 2588 2587 2586 2585 2584

22 DECEMBER 1975

11.5 μm

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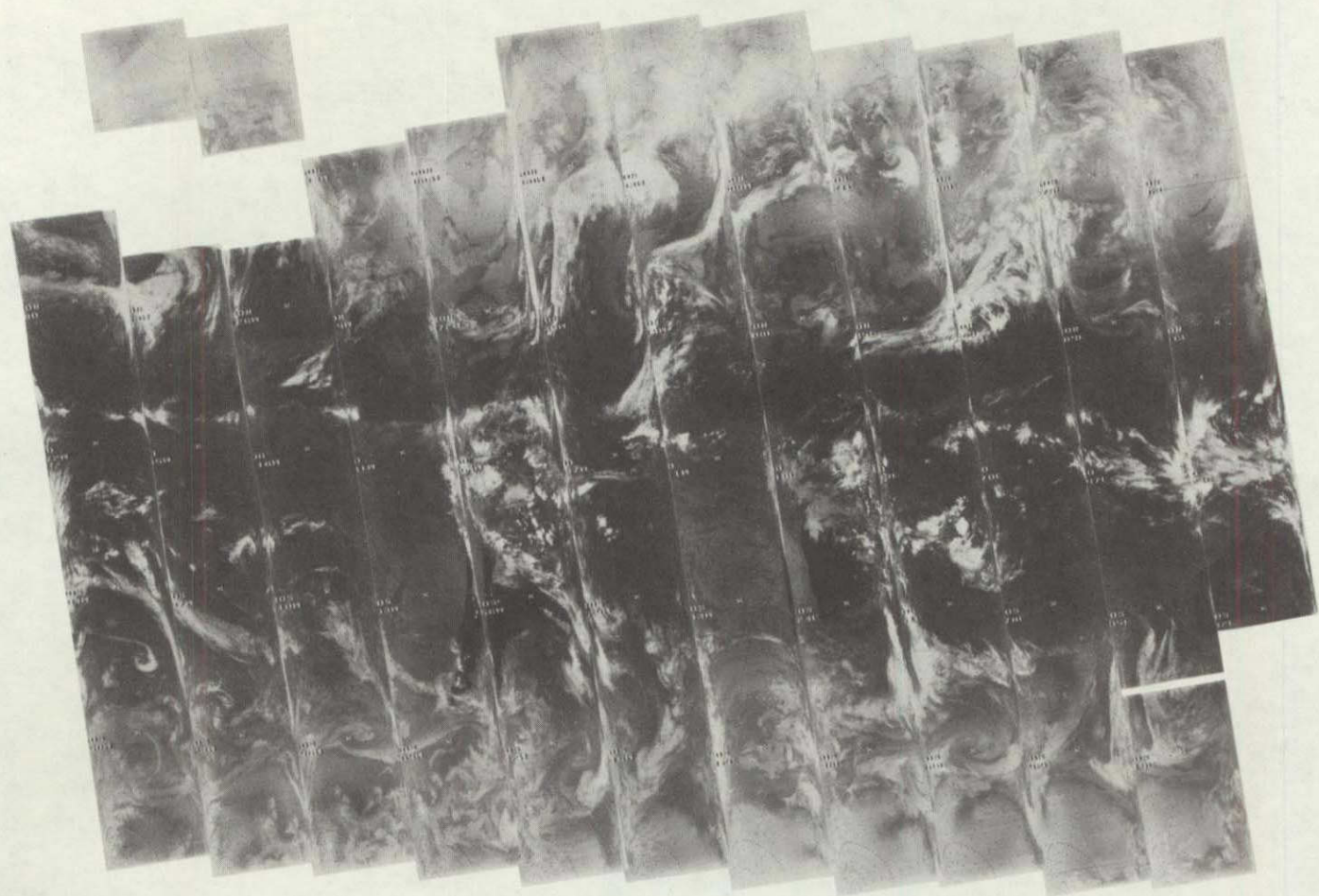


2597 2596 2595 2594 2593 2592 2591 2590 2589 2588 2587 2586 2585 2584

22 DECEMBER 1975

6.7 μm

4-233



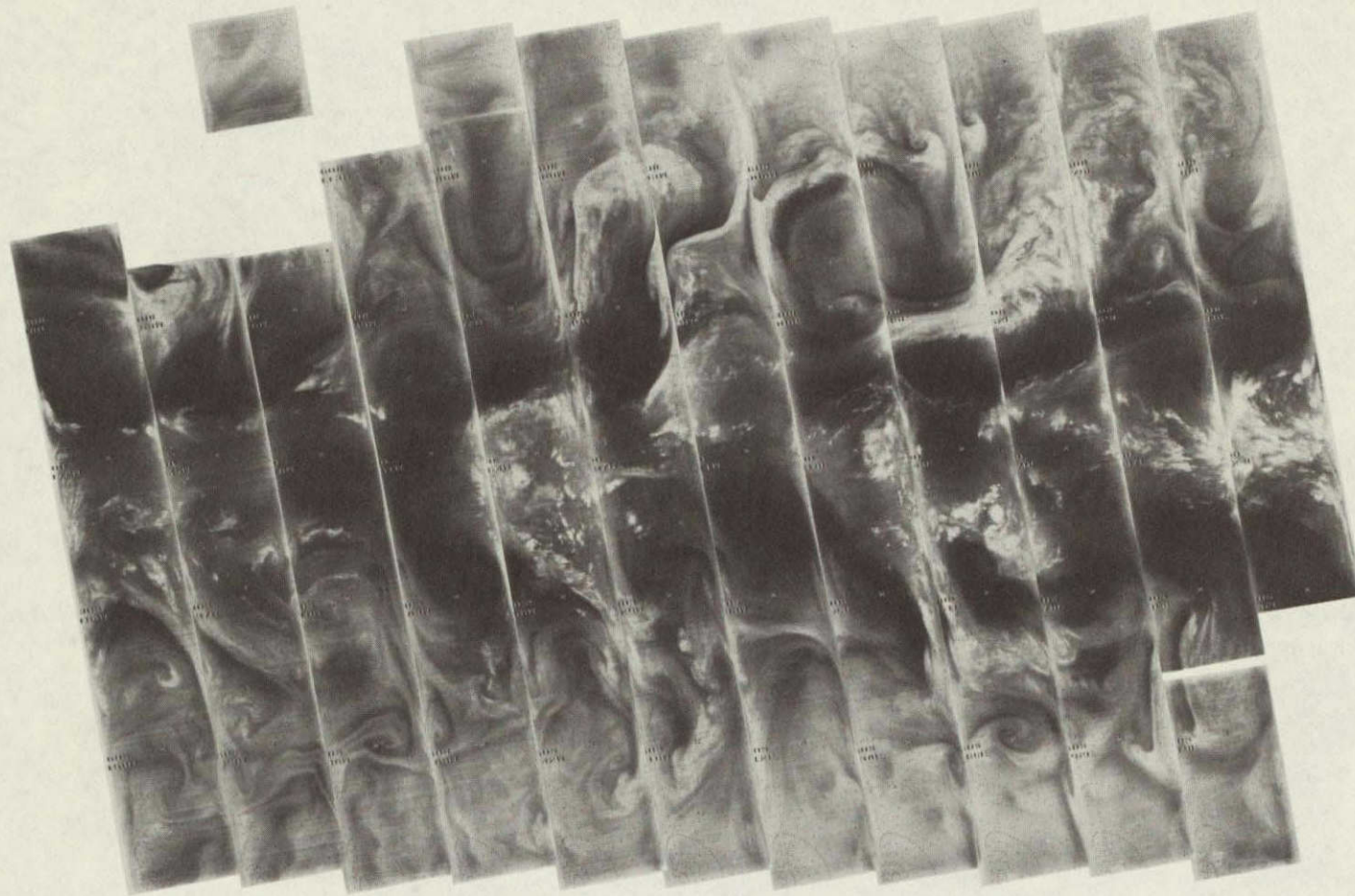
2610 2609 2608 2607 2606 2605 2604 2603 2602 2601 2600 2599 2598

23 DECEMBER 1975

11.5 μm

4-234

4-235



2610 2609 2608 2607 2606 2605 2604 2603 2602 2601 2600 2599 2598

23 DECEMBER 1975

6.7 μm

4-236



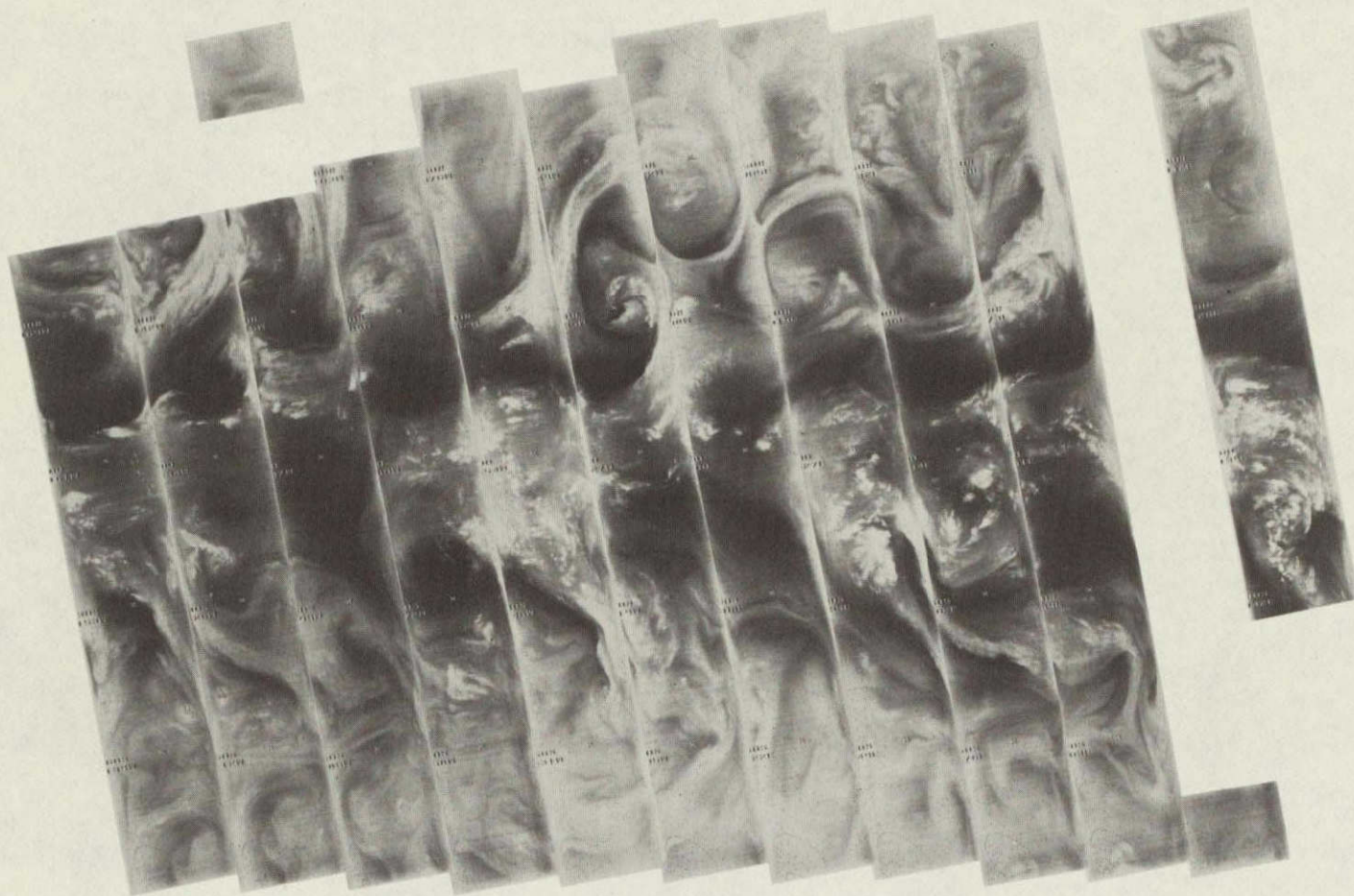
2623 2622 2621 2620 2619 2618 2617 2616 2615 2614 2613 2612 2611

24 DECEMBER 1975

11.5 μ m

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2623 2622 2621 2620 2619 2618 2617 2616 2615 2614 2613 2612 2611

24 DECEMBER 1975

6.7 μm

4-237

4-238

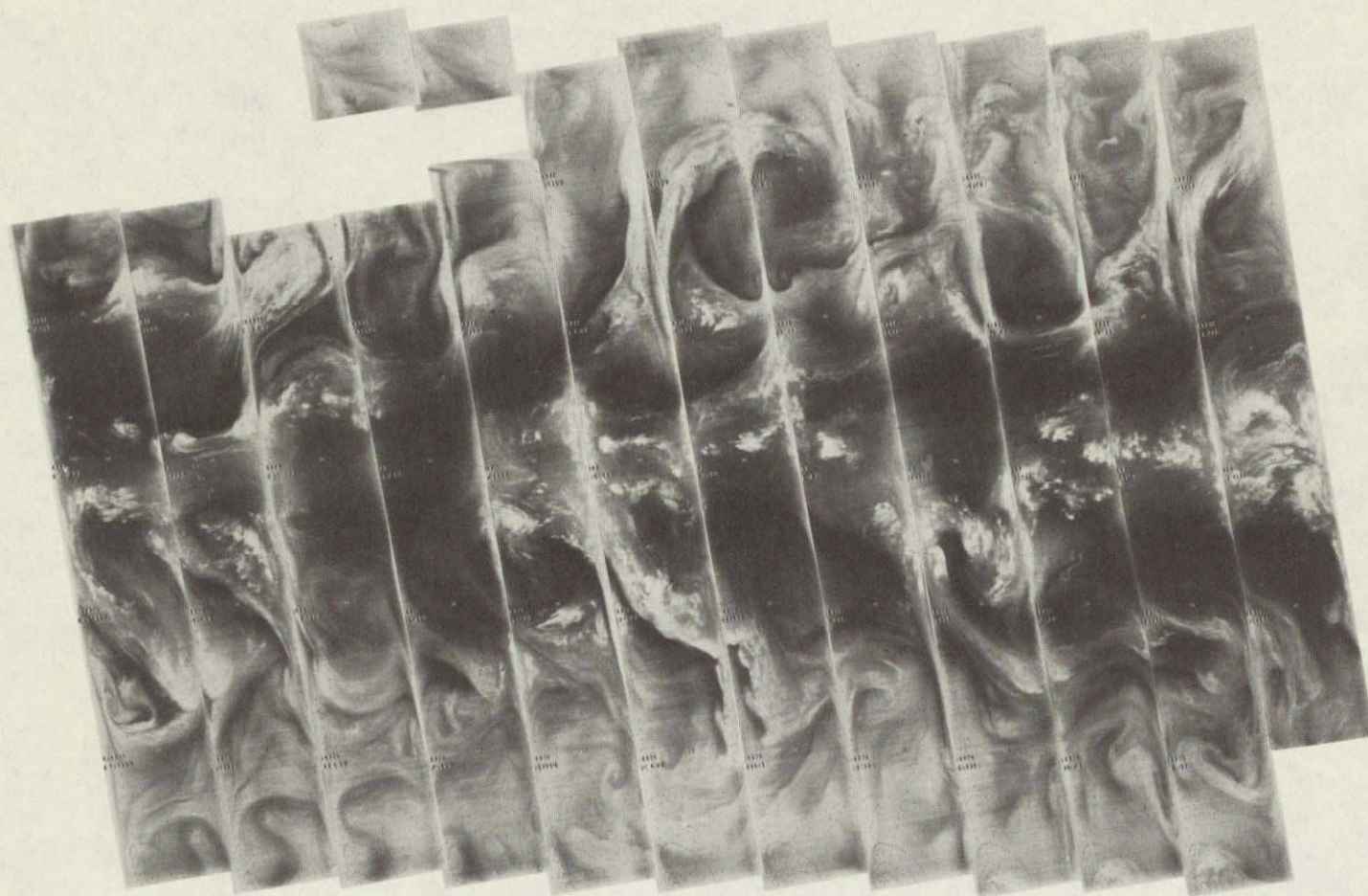


2637 2636 2635 2634 2633 2632 2631 2630 2629 2628 2627 2626 2625 2624

25 DECEMBER 1975

11.5 μm

4-239

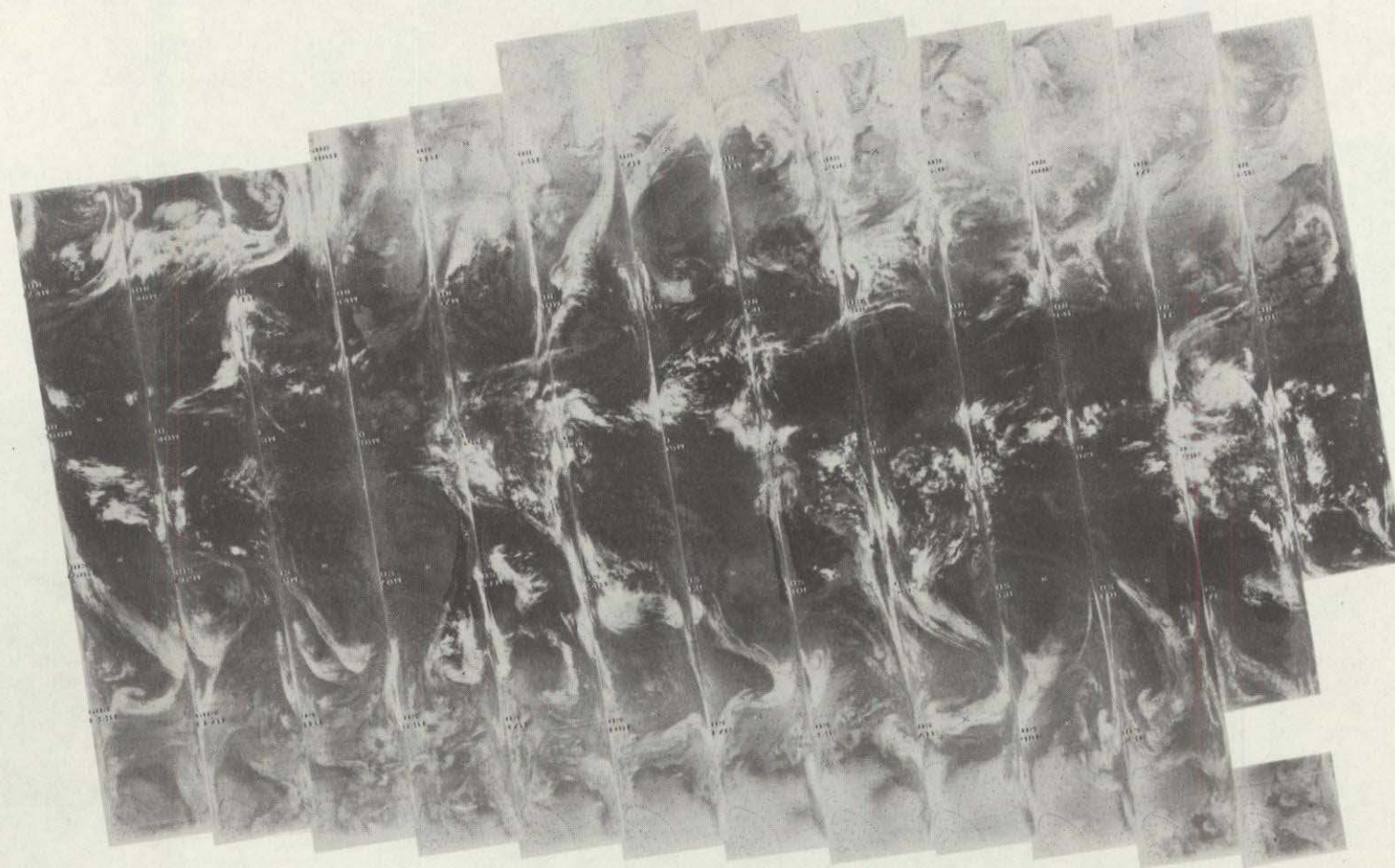


2637 2636 2635 2634 2633 2632 2631 2630 2629 2628 2627 2626 2625 2624

25 DECEMBER 1975

6.7 μm

4-240

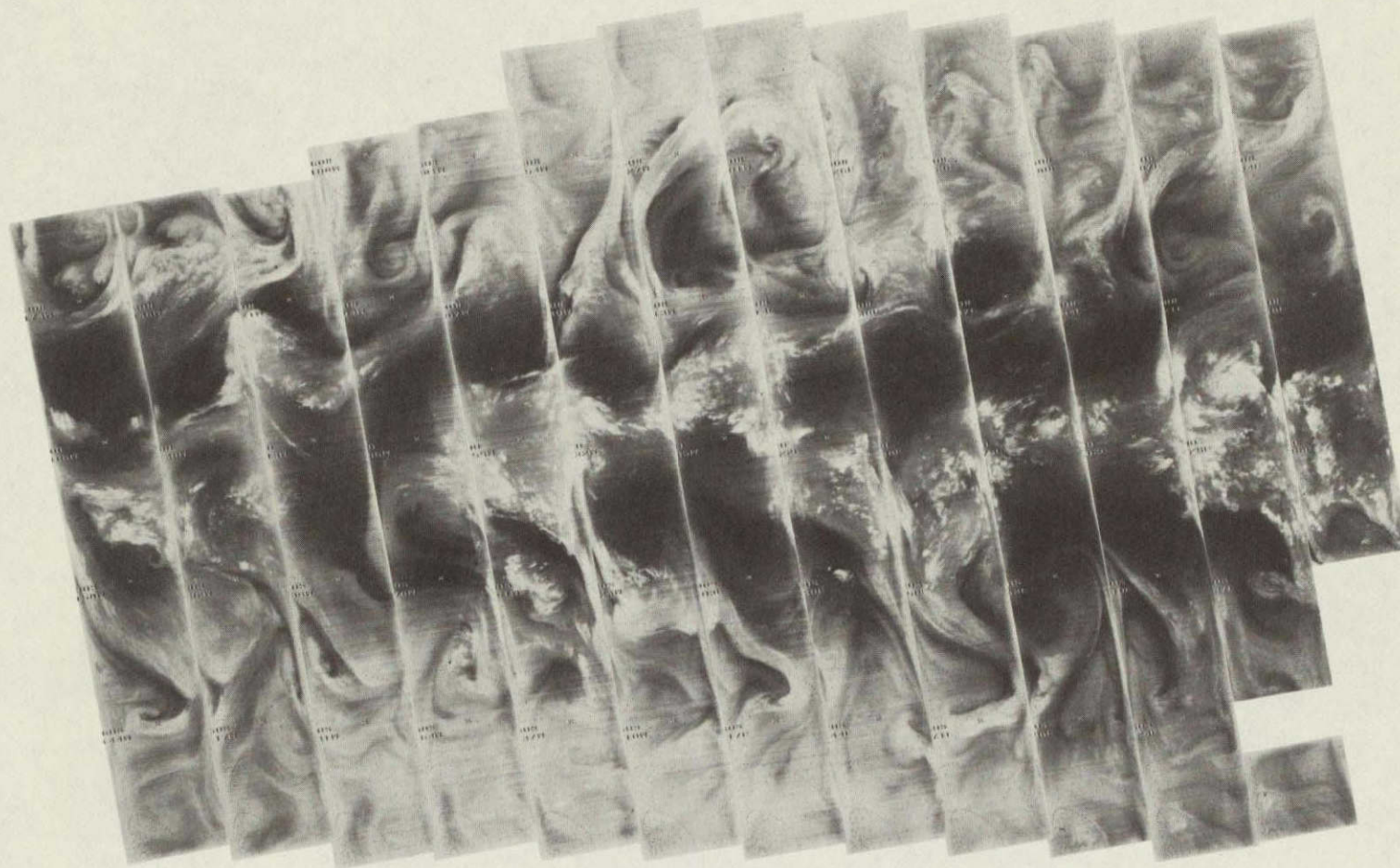


2650 2649 2648 2647 2646 2645 2644 2643 2642 2641 2640 2639 2638

26 DECEMBER 1975

11.5 μm

4-241



2650 2649 2648 2647 2646 2645 2644 2643 2642 2641 2640 2639 2638

26 DECEMBER 1975

6.7 μm

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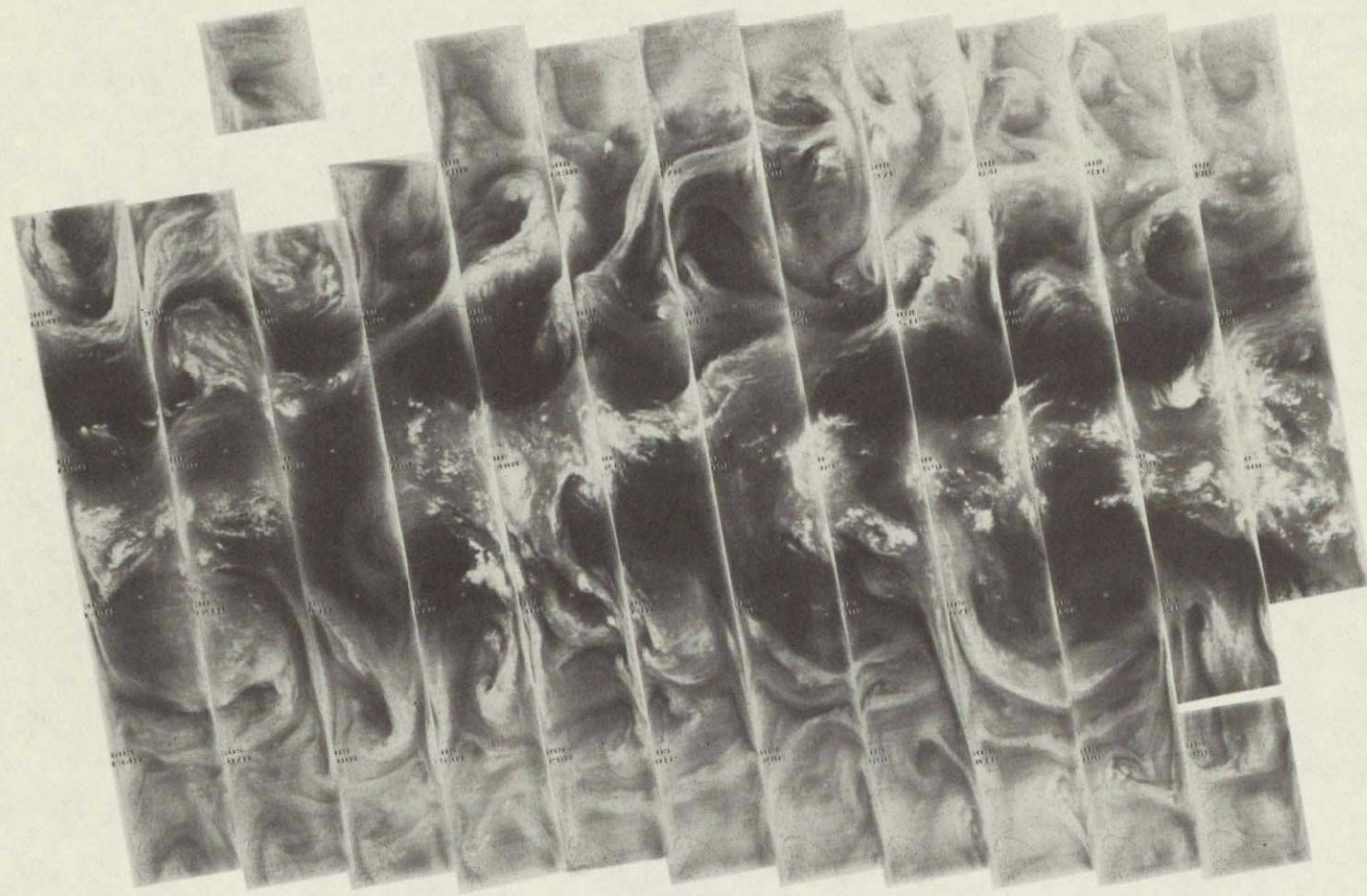


2664 2663 2662 2661 2660 2659 2658 2657 2656 2655 2654 2653 2652 2651

27 DECEMBER 1975

11.5 μ m

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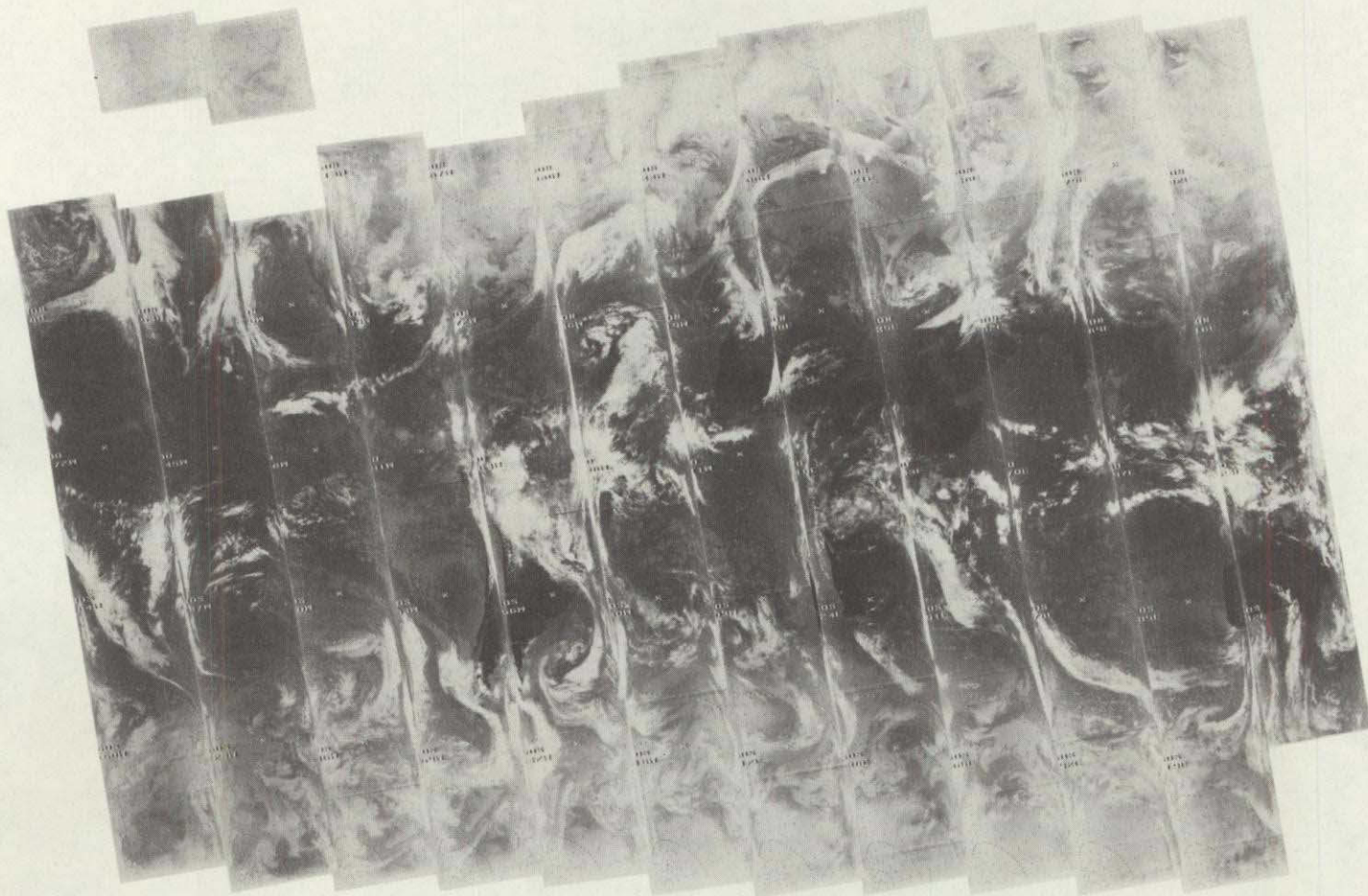
2664 2663 2662 2661 2660 2659 2658 2657 2656 2655 2654 2653 2652 2651

27 DECEMBER 1975

6.7 μ m

4-243

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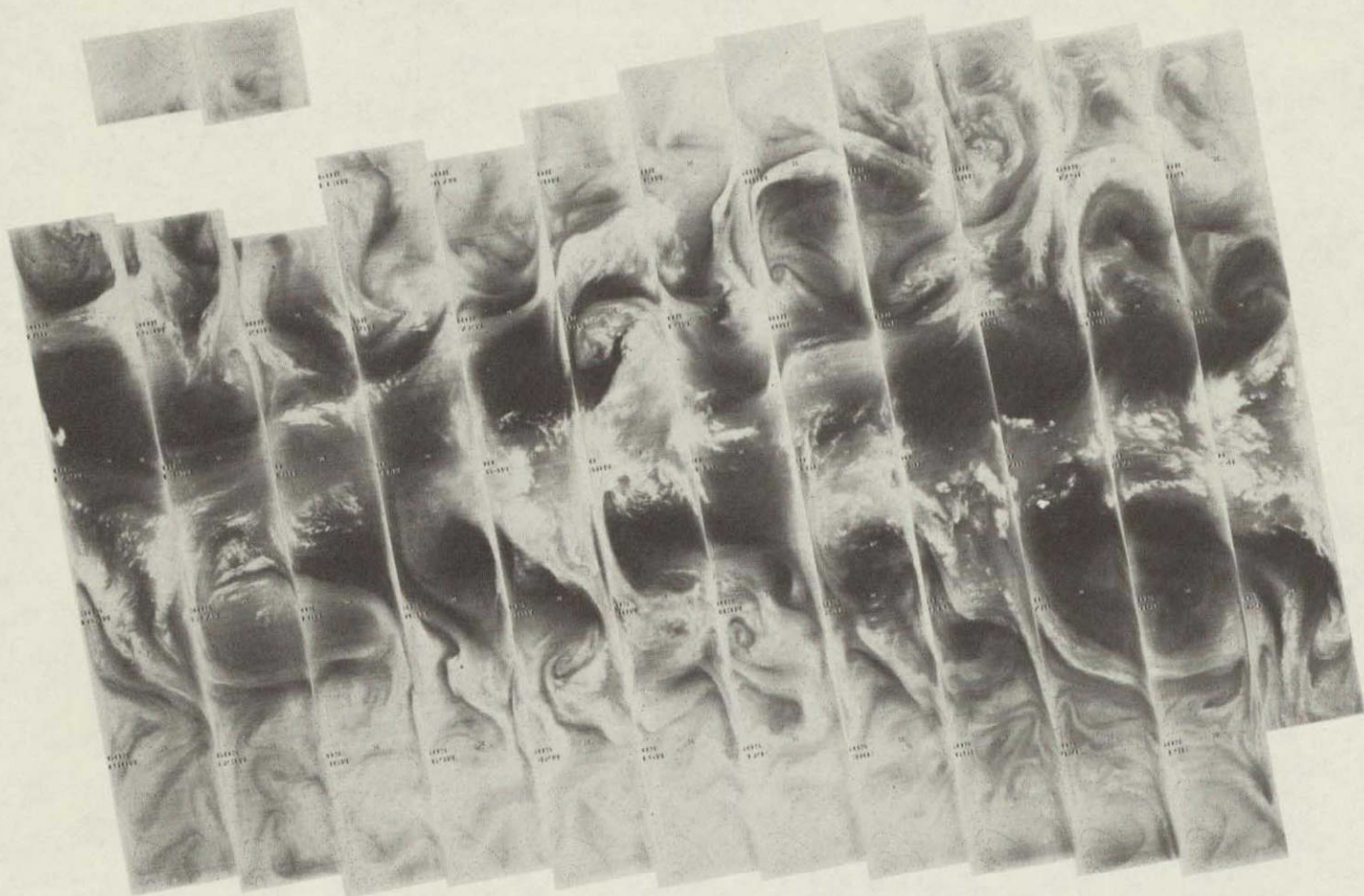
2677 2676 2675 2674 2673 2672 2671 2670 2669 2668 2667 2666 2665

28 DECEMBER 1975

11.5 μ m

4-244

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2677 2676 2675 2674 2673 2672 2671 2670 2669 2668 2667 2666 2665

28 DECEMBER 1975

6.7 μ m

4-245

4-246

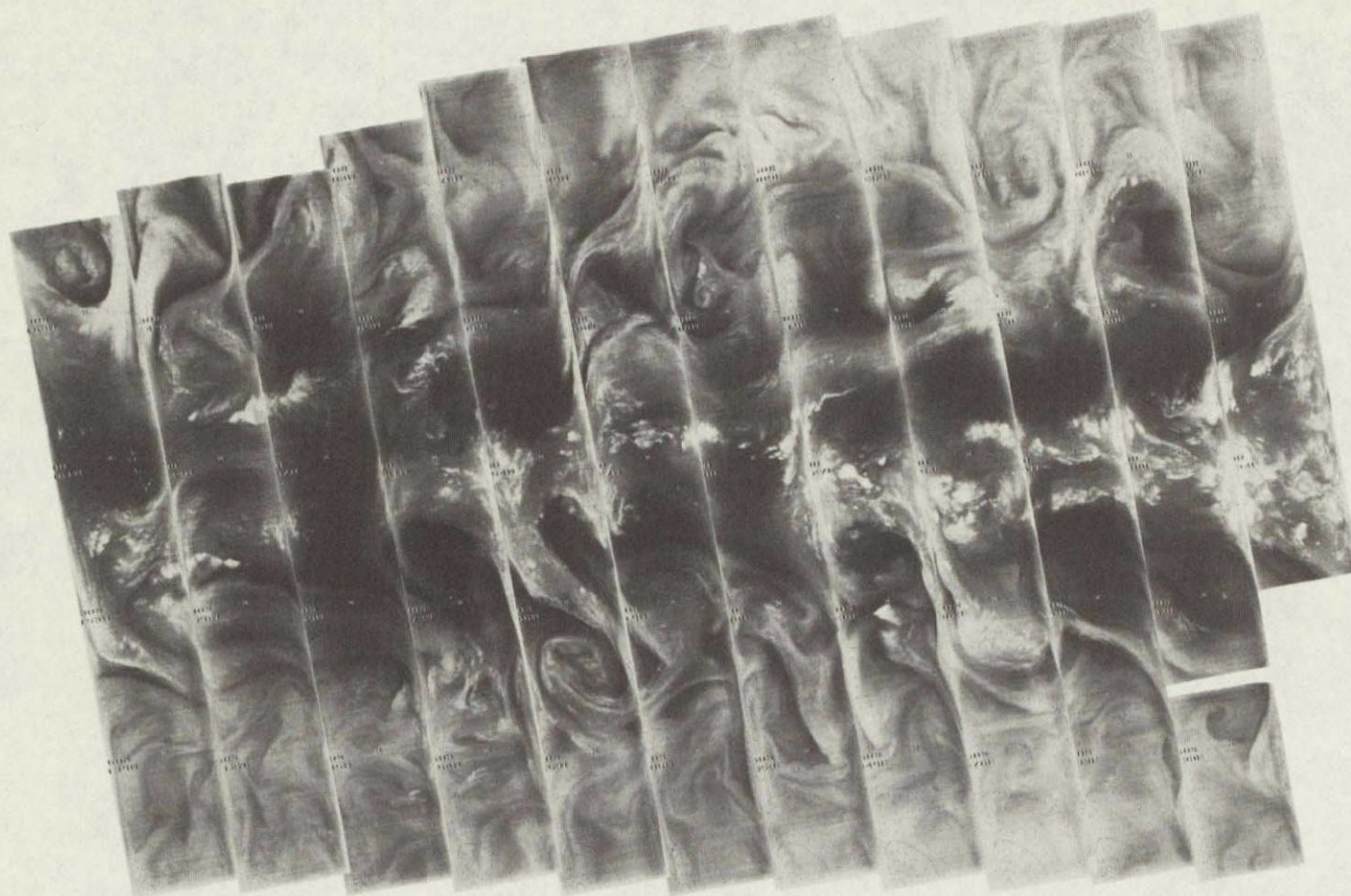


2690 2689 2688 2687 2686 2685 2684 2683 2682 2681 2680 2679 2678

29 DECEMBER 1975

11.5 μm

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2690 2689 2688 2687 2686 2685 2684 2683 2682 2681 2680 2679 2678

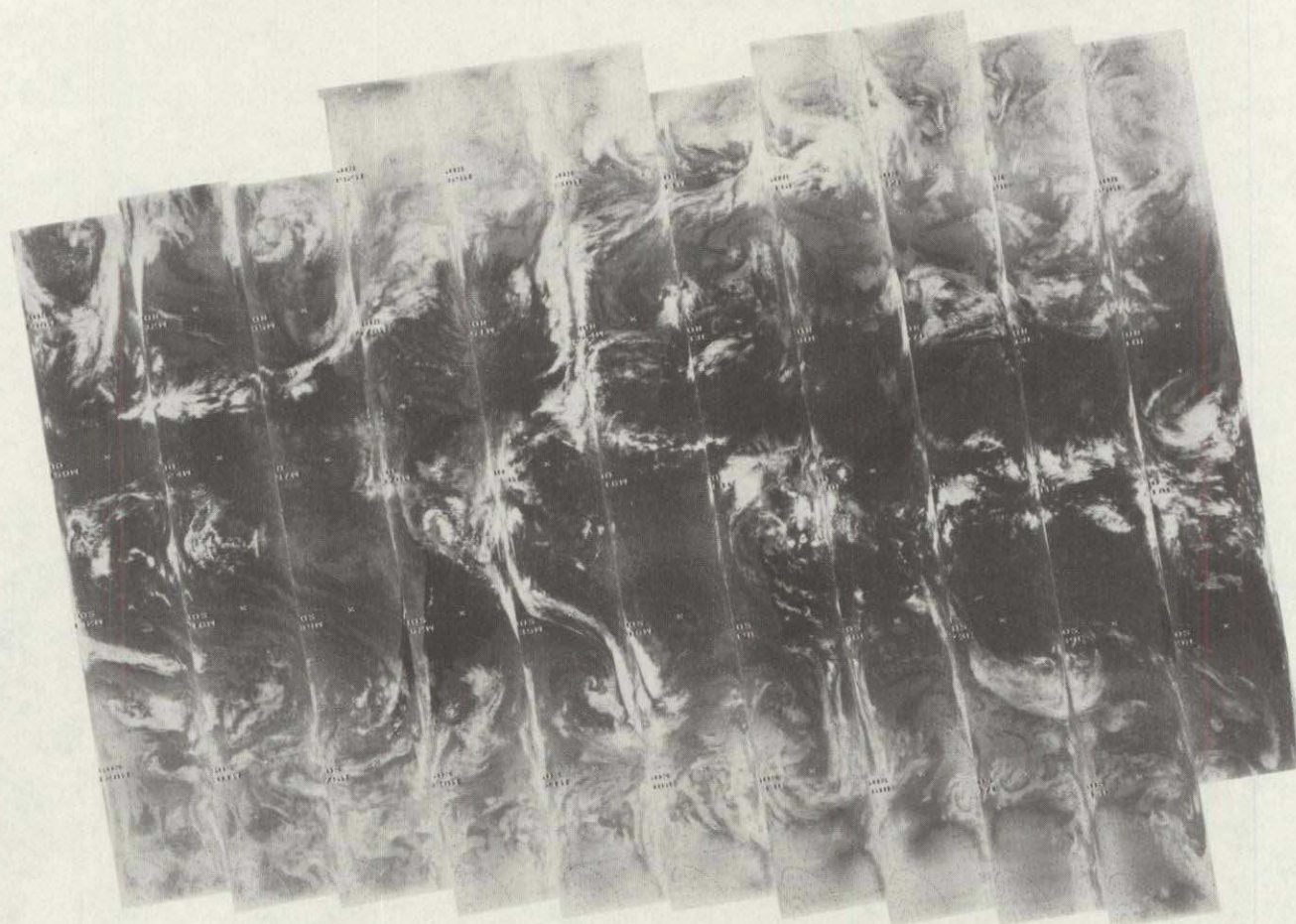
29 DECEMBER 1975

6.7 μ m

4-247

4-248

T



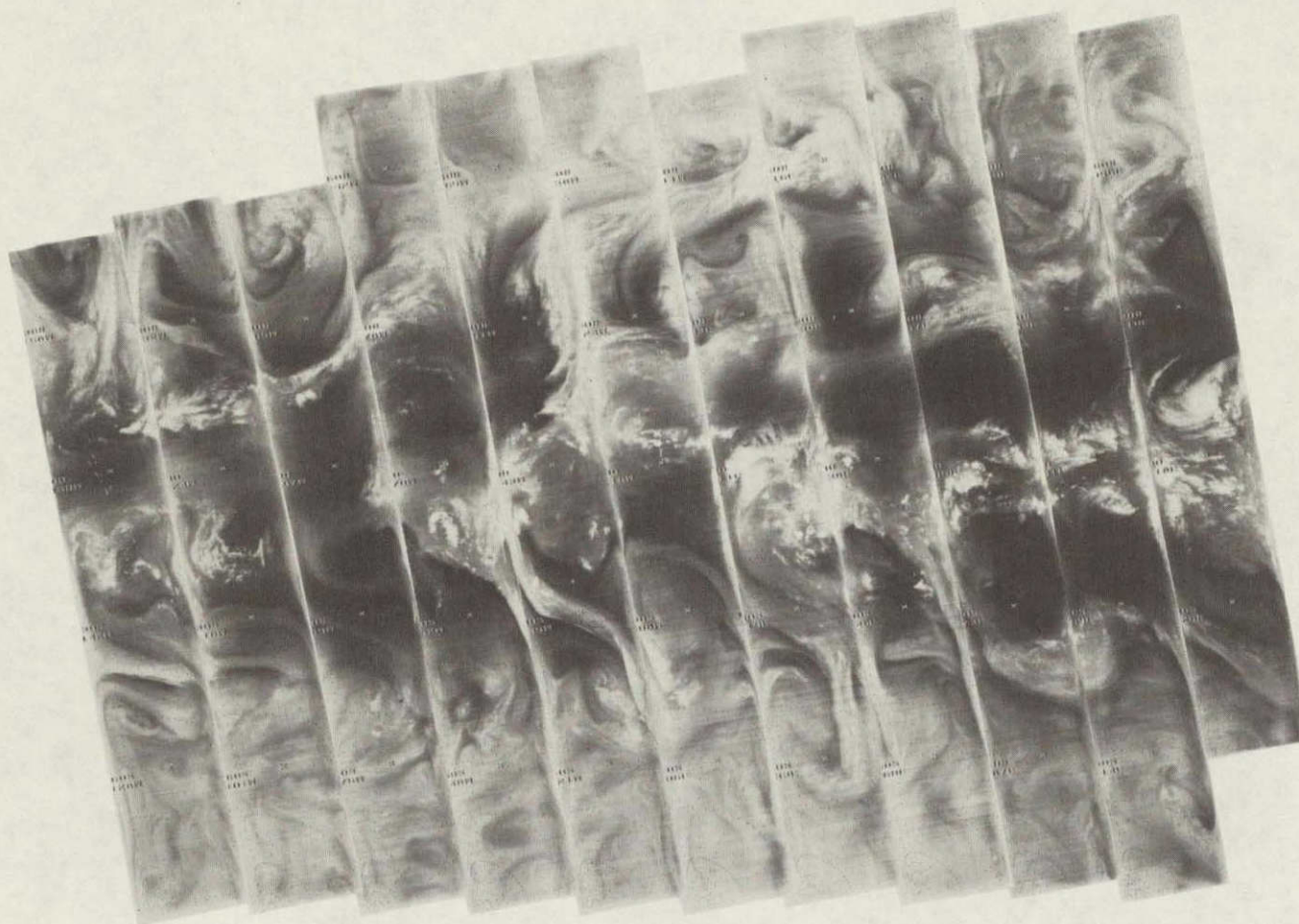
T

2704 2703 2702 2701 2700 2699 2698 2697 2696 2695 2694 2693 2692 2691

30 DECEMBER 1975

11.5 μm

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2704 2703 2702 2701 2700 2699 2698 2697 2696 2695 2694 2693 2692 2691

30 DECEMBER 1975

6.7 μm

4-249

4-250

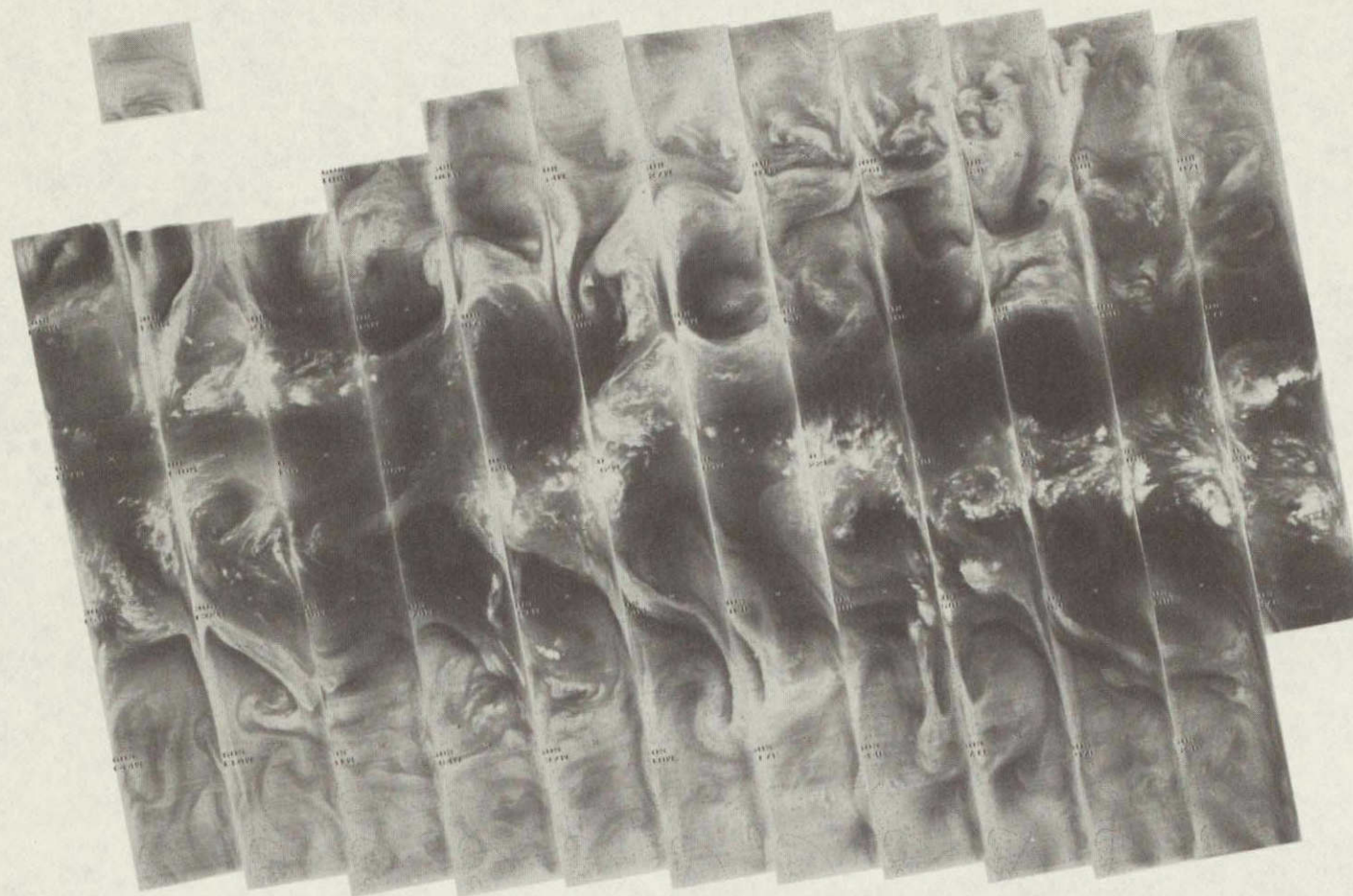


2717 2716 2715 2714 2713 2712 2711 2710 2709 2708 2707 2706 2705

31 DECEMBER 1975

11.5 μm

4-251



2717 2716 2715 2714 2713 2712 2711 2710 2709 2708 2707 2706 2705

31 DECEMBER 1975

6.7 μm

SECTION 5

CORRECTIONS TO THE NIMBUS 6 USER'S GUIDE

This section presents all corrections or additions to The Nimbus 6 User's Guide, which now are known to be necessary. If additional corrections are required, they will appear in a subsequent catalog. All corrections will be carried forward cumulatively into each new catalog.

5.1 THIR Corrections to the User's Guide

The THIR mirror on Nimbus 6 rotates counter clockwise. Therefore, replace lines one through four on page 14 with the following:

" . . . rotation is such that, when combined with the velocity vector of the satellite, a left-hand spiral results. Therefore, the mirror scans across the earth from west to east in the daytime when traveling northward, and from east to west at night when traveling southward. "

The information in Figure 2-4 on page 17 is correct. However, the direction of scan is counter clockwise, and not clockwise as shown.

5.2 HIRS Corrections to the User's Guide

On page 40, Table 3-2, under "Detector Summary" change LnSe to LnSb.

The CHANNEL (and) RANGE information in the swath displays for HIRS has been changed since launch, making Table 3-5 on pages 54 and 55 in the User's Guide incorrect. The table below labeled Table 3-5 provides the correct information.

5.3 SCAMS Corrections to the User's Guide

The information contents of the image in the swath displays for SCAMS has been changed since launch, making Tables 4-5, 4-6, and 4-7 in the User's Guide incorrect. Thus, the table below labeled Table 4-5 and 6 replaces Tables 4-5 and 4-6 in the User's Guide, and the table labeled 4-7 replaces Table 4-7 in the User's Guide. All the images display the same parameters. Therefore, these new tables do not list all the possible displays, as were listed in the old Tables 4-5, 4-6, and 4-7.

Section 4.5.3 "Tape Format" on page 83 of the User's Guide states that each tape will have "five files, i. e., a short header file . . . and four data files, . . . " There will not be a header file on the archival tape. The sentence should be changed to read: "The tapes will be standard 9-track 1600 BPI tapes, each containing four data files, one for each of four days. "

Table 5-1

This table replaces Table 3-5 on pages 54 and 55 in The Nimbus 6 User's Guide

Table 3-5

Temperature Range of Gray Scale, and Channel of HIRS Data for each Swath on each HIRS Image
Display between Orbit 426 and 2717 (14 July through 31 December 1975)

		Swath Number									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 14 July-20 July Orbits 426-513	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	18-18	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black to white)	300-200	290-210	260-210	310-270	100-900	0-30	290-210	260-210	240-210	280-210
Coverage Period 22 July-31 July Orbits 538-545 548-549 600-613 615-647 651-657 659	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	17-17	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	290-210	260-230	310-270	100-900	100-900	280-200	280-200	280-200	280-200
Coverage Period 23 July-6 Aug. Orbits 546-547 553-599 614 648-650 658 660-747	HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	310-270	300-200	0-30	100-900	260-230	280-200	280-200	280-200	280-200

Table 3-5 (Continued)

		Swath Number									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 7 Aug.-31 Dec. Orbits 748-2717	HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	310-230	310-230	310-270	0-50	100-900	280-210	300-210	300-210	240-185	300-185

*The HIRS channel number is number before the hyphen. The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K). The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display." The 18 steps of the scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in μm) of each channel on these displays is: channel 3 = 14.4, 8 = 11.0, 9 = 8.2, 10 = 6.7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3.71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data. Table 3-1 on page 39 of the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels.

Table 5-2

This table replaces Tables 4-5 and 4-6 (on pages 79 through 81) in The Nimbus 6 User's Guide

Table 4-5 and 6

Parameter Value for each Step of the Gray Scale on the SCAMS Image
 Displays for Parameters 2, 3, 11, 12 and 16
 (valid between orbit 426, 14 July, and orbit 2717, 31 December 1975)

Gray Scale Number	Parameters						
	2 (31.65 GHz T _A) (°K)	3 (52.85 GHz T _A) (°K)	11 (Integrated water vapor) (g/mm ²)	12* (Integrated liquid water) (g/mm ²)	12** (Integrated liquid water) (g/mm ²)	12*** (Integrated liquid water) (g/mm ²)	16 (param. 2) minus (param. 3) (°K)
(black) 1	> 320	> 280	> 60	> 1.6	> 1.5	> 2.0	> 10
2	306 - 320	276 - 280	56 - 60	1.5 - 1.6	1.4 - 1.5	1.9 - 2.0	08 - 10
3	293 - 306	271 - 276	53 - 56	1.4 - 1.5	1.3 - 1.4	1.8 - 1.9	06 - 08
4	279 - 293	267 - 271	49 - 53	1.3 - 1.4	1.2 - 1.3	1.6 - 1.8	04 - 06
5	265 - 279	263 - 267	45 - 49	1.2 - 1.3	1.1 - 1.2	1.5 - 1.6	02 - 04
6	251 - 265	258 - 263	41 - 45	1.1 - 1.2	1.0 - 1.1	1.4 - 1.5	00 - 02
7	238 - 251	254 - 258	38 - 41	1.0 - 1.1	0.9 - 1.0	1.3 - 1.4	-02 - 00
8	224 - 238	249 - 254	34 - 38	0.9 - 1.0	0.8 - 0.9	1.1 - 1.3	-04(-) - 02
9	210 - 224	245 - 249	30 - 34	0.8 - 0.9	0.7 - 0.8	1.0 - 1.1	-06(-) - 04
10	196 - 210	241 - 245	26 - 30	0.7 - 0.8	0.6 - 0.7	0.9 - 1.0	-08(-) - 06
11	183 - 196	236 - 241	23 - 26	0.6 - 0.7	0.5 - 0.6	0.8 - 0.9	-10(-) - 08
12	169 - 183	232 - 236	19 - 23	0.5 - 0.6	0.4 - 0.5	0.6 - 0.8	-12(-) - 10
13	155 - 169	228 - 232	15 - 19	0.4 - 0.5	0.3 - 0.4	0.5 - 0.6	-14(-) - 12
14	141 - 155	223 - 228	11 - 15	0.3 - 0.4	0.2 - 0.3	0.4 - 0.5	-16(-) - 14
15	128 - 141	219 - 223	08 - 11	0.2 - 0.3	0.1 - 0.2	0.3 - 0.4	-18(-) - 16
16	114 - 128	214 - 219	04 - 08	0.1 - 0.2	0.0 - 0.1	0.1 - 0.3	-20(-) - 18
17	100 - 114	210 - 214	00 - 04	0.0 - 0.1	-0.1 - 0.0	0.0 - 0.1	-22(-) - 20
(white) 18	< 100	< 210	< 00	< 0.0	< -0.1	< 0.0	< -22

*valid between orbits 426 and 477

**valid between orbits 478 and 1425

***valid between orbits 1426 and 2717

Table 5-3
This table replaces Table 4-7 (on pages 82 and 83) in
The Nimbus 6 User's Guide

Table 4-7
Contour Program Options used for Parameters 13, 14, and
15 on the SCAMS Image Displays

Contour options	Parameters			Valid for orbits
	13 Mean temperature between 1000 mb and 500 mb	14 Mean temperature between 500 mb and 250 mb	15 Mean temperature between 250 mb and 100 mb	
Contour interval	4°K	4°K	4°K	426-851 (14 July- 14 August)
Contour thickness	1°K	1°K	1°K	
Contour interval	4°K	4°K	4°K	852-2717 (14 August- 31 December)
Contour thickness	2°K	2°K	2°K	

In Table 4-8 on page 80 the "Pitch error" and "Roll error" "Dimensional Units" should be changed to counts (from Deg) and the "Multiplier Used" should be changed to 1 (from 32). In the same table the "Playback orbit" should be followed by one "I*2 Spare", and then by the "Reference orbit", which should be changed to I*4 (rather than I*2). (Reference orbit = year * 100,000 + day * 100 + finish hour.) The "Dimensional Units" for the "Geopotential thicknesses" on page 85 of the same table should be changed to "°K" (from DM).

The following information, describing how the antenna temperatures are computed from the SCAMS instrument digital data, should be added after SCAMS Section 4.5 of the User's Guide.

4.6 Post-launch Calibration

Antenna temperatures are computed from the SCAMS instrument digital data for each of the five channels by the equation

$$T_A = T_{AS} + \frac{T_{AC} - T_{AS}}{d_c - d_s} (d - d_s)$$

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where T_A is antenna temperature for the earth (positions 0-12), T_{AS} is the space antenna temperature (position 13), T_{AC} is the calibration target antenna temperature (position 14), d is earth data in counts, d_s is space data in counts, and d_c is calibration target data in counts. The digital data matrix is described in Table 4-2 of the Nimbus 6 User's Guide. The space calibration antenna temperature is assumed constant at 3°K for all five channels. The target antenna temperature is computed by

$$T_{AC} = T_C + T_{CO}$$

The constant offset T_{CO} is currently assumed to be zero for all channels, and the target temperatures (T_C) are given by

$$T_C = a_0 + a_1 (R - R_{25}) + a_2 (R - R_{25})^2$$

where the thermistor resistances (R) are computed by

$$R = R_1 + \frac{R_2 - R_1}{d_{R2} - d_{R1}} (d_R - d_{R1})$$

and values of the other constants are listed in Table 4-9. Note channels 3, 4, and 5 share the same calibration target. Also listed in Table 4-9 are word numbers in the digital data matrix containing data values d_R , d_{RI} , and d_{R2} .

5.4 ESMR Corrections to the User's Guide

The following are corrected equations for the ESMR Section of the User's Guide:

page 90

$$X \text{ (km)} = (636 + 10.8P + 0.32P^2) R_i$$

page 96

$$T_B = T_A - (T_A - T_C) \frac{(C - C_A)}{(C_C - C_A)}$$

page 101

$$T_{\text{Horizontal True}} = 1 + a \frac{T_{\text{Horizontal Nominal}} - T_{\text{Vertical Nominal}}}{T_{\text{Horizontal Nominal}}}$$

Table 5-4

This table accompanies Section 4.6 "Post-launch Calibration", and should be added to the end of the SCAMS section of the User's Guide.

Table 4-9

Thermistor Calibration Constants
used to Calculate the SCAMS Target Temperatures

channel constant	1	2	3,4,5
a_0	298.16		
a_1	.46485	.46535	.46814
a_2	$3.0 \cdot 10^{-5}$	$2.9 \cdot 10^{-5}$	$3.0 \cdot 10^{-5}$
R_{25}	603.75	602.98	599.71
R_1	495.6		
R_2	603.4		
d_R (word no.)	1	11	2
d_{R1} (word no.)	61		62
d_{R2} (word no.)	71		72

$$T_{\text{Vertical True}} = 1 + b \frac{T_{\text{Vertical Nominal}} - T_{\text{Horizontal Nominal}}}{T_{\text{Horizontal Nominal}}}$$

page 106

$$N_i = 256 (T_{Hi} - 100) + T_{Vi} - 100$$

The following information supplements Section 5.3.2 in the User's Guide.

The display format and temperature ranges of the images in the swath displays for ESMR has been changed since launch. Only the full vertical scale (SCALE-F) is used, and its format has been changed to provide a better aspect ratio to each image. Each scan line of ESMR data is displayed twice (rather than once, as stated on the last line on page 103 of the User's Guide) and each of the 71 scan-spot elements across a scan is only displayed once (rather than twice, as stated on line three on page 104 of the User's Guide).

By displaying each of the 71 scan-spot elements only once the width of each swath is half the planned width. Therefore, the display format now contains 20 swaths in two groups of ten, each with its own TIME (and) SUBPOINT line. Each group of ten contains the same geographic coverage. The swaths within each group contain different temperature and polarization information. However, the temperature and polarization information for each group is similar. That is, the range of temperatures and the polarization for swath 1 are the same as for swath 11; similarly, swaths 2 and 12 are the same, etc. The swaths are not labeled, as planned. On these displays swath number 1 is on the far left, with numbers incrementing to swath number 20 on the far right. The tables here labeled 5-5 and 5-5a replace Table 5-5 on page 105 of the User's Guide. The new tables give the new brightness temperature values versus steps of the gray scale for each of the 20 swaths.

The ten swaths on the right half of each display show the earliest recorded data, and the ten on the left half show the latest recorded data. If the right set of ten swaths were cut and placed above the left set, the modified display would show the continuous coverage recorded for that orbit.

5.5 ERB Corrections to the User's Guide

Post-launch calibration procedures are described below. While some numbers are for the period of this catalog, the calibration procedure is valid for all data. This information can be added as Section 6.5a to the User's Guide and would fit on page 134.

6.5a Post-launch Calibration

The observations from the wide-angle channels (11 and 12), which measure the total energy ($< 0.2 \mu\text{m}$ to $> 50 \mu\text{m}$) emitted and reflected by the earth, depend on the prelaunch calibration and pertinent instrument temperatures. Assuming unit emissivity for the target scene, the irradiance from the scene is given by,

$$H_T = [\Delta W - \epsilon_s F_s \sigma T_s^4 + \epsilon_d F_d \sigma (T_d + K v)^4]$$

where

ΔW = effective thermopile irradiance (w m^{-2})

$$\sigma = 5.6697 \times 10^{-8} \text{ w m}^{-2} (\text{deg. K})^{-4}$$

ϵ_s = emissivity of FOV stop = 0.965

F_s = view factor of the FOV stop = 0.18892

T_s = temperature ($^{\circ}\text{K}$) of the FOV stop

Table 5-5
This table replaces Table 5-5 on page 105 in the User's Guide

Table 5-5
Brightness Temperature Value for each Step of the Gray Scale on ESMR Image
Displays for Orbits 426 through 827 (14 July through 12 August 1975)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H + T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H + T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H + T_V}{2}$	10 and 20 ($T_V - T_H$)
(black)	1	> 200		> 250			> 300			> 50
	2	196-200	same	246-250	same	same	296-300	same	same	46-50
	3	193-196	as	243-246	as	as	293-296	as	as	43-46
	4	190-193	1 and 11	240-243	4 and 14	4 and 14	290-293	7 and 17	7 and 17	40-43
	5	187-190		237-240			287-290			37-40
	6	184-187		234-237			284-287			34-37
	7	181-184		231-234			281-284			31-34
	8	178-181		228-231			278-281			28-31
	9	175-178		225-228			275-278			25-28
	10	171-175		221-225			271-275			21-25
	11	168-171		218-221			268-271			18-21
	12	165-168		215-218			265-268			15-18
	13	162-165		212-215			262-265			12-15
	14	159-162		209-212			259-262			09-12
	15	156-159		206-209			256-259			06-09
	16	153-156		203-206			253-256			03-06
	17	150-153		200-203			250-253			00-03
(white)	18	< 150		< 200			< 250			< 00

T_H = Brightness temperature derived from the ESMR horizontal polarization channel data

T_V = Brightness temperature derived from the ESMR vertical polarization channel data

Table 5-6

This table follows the new Table 5-5 (above), which replaced
Table 5-5 on page 105 in the User's Guide

Table 5-5a

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays
for Orbits 828 through 2717 (13 August through 31 December 1975)
(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H + T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H + T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H + T_V}{2}$	10 and 20 ($T_V - 0.6T_H$)
(black) 1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	> 140
2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
16	134-139	174-175	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white) 18	< 130	< 170	< 150	< 190	< 220	< 200	< 240	< 260	< 260	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

ϵ_d = emissivity of the thermopile = 0.977

F_d = view factor of the thermopile = 0.80461

T_d = temperature (°K) of the thermopile base

K = factor relating thermopile base temperature to thermopile surface temperature = 0.0031°K per count

v = thermopile output in digital counts

The effective thermopile irradiance (ΔW) is obtained from the thermopile output (v) as follows:

$$\Delta W = a_0 (T_m) + a_1 (T_m) \cdot v$$

where

$$a = C_0 + C_1 T_m,$$

and

$$a_1 = d_0 + d_1 T_m$$

are derived from prelaunch calibrations and depend on the module temperature (T_m , °C). The coefficients C_0 , C_1 , d_0 , d_1 are given below. In calibrating channel 11 and channel 12 (W) with the FOV stop out, the quantity F_s in the equation for H_T is set to zero.

	<u>Ch. 11</u>	<u>Ch. 12 (W)</u>	<u>Ch. 12 (N)</u>
C_0 :	9.86	10.4	8.38
C_1 :	0.18358	0.23235	0.18483
d_0 :	0.6042	0.6035	0.6014
d_1 :	-8.254×10^{-4}	-6.109×10^{-4}	-5.879×10^{-4}

The observations from the other two wide-angle channels (13 and 14), which measure the shortwave radiation (0.2 μm to 4.0 μm), and (0.7 μm to 3.0 μm), are transformed to irradiance (H) by,

$$H = \frac{(V - V_o)}{S_T}$$

where V is the digital counts, V_o is the offset (in counts) observed from dark F'OV's, and S_T is the sensitivity ($\text{w m}^{-2} \text{ count}^{-1}$) obtained from the equation: $S_T = S_o (1 + (0.01) \cdot (T-25) \cdot \text{STC})$, where S_o is the sensitivity at 25°C , T is the detector temperature ($^\circ\text{C}$), and STC is the sensitivity temperature coefficient (percent per degree C). These constants are given below:

<u>Ch</u>	<u>V_o</u>	<u>S</u>	<u>STC</u>
13	-41	2.004	0.04
14	-44	3.989	0.03

The interpretation of digital counts (V) from the shortwave scanning channels (15-18) gives the radiance ($\text{w m}^{-2} \text{ sr}^{-1}$) of the scene (N_s) by,

$$N = \frac{(V - V_o)}{S_T}$$

where V_o is the offset (counts) obtained during views of the internal blackbody or space. The sensitivity S_T at temperature $T(^{\circ}\text{C})$ is obtained using the equation for S_T described above, and the constants given below.

<u>Ch</u>	<u>V_o</u>	<u>S</u>	<u>STC</u>
15	-3	3.155	0.0
16	0	3.275	0.03
17	-1	3.116	-0.01
18	15	2.963	-0.05

A series of checks on the sensitivity of these channels, using the on-board diffuse target, indicated no noticeable degradation over the July-August period of operation.

The longwave scanning channels (19-22) have had numerous inflight calibrations which have remained essentially unchanged since 3 July. The calibration coefficients, a_o and a_1 relate digital counts (V) to the scene radiance N ($\text{w m}^{-2} \text{ sr}^{-1}$) as follows:

$$N_s = N_m + a_o + a_1 \cdot V$$

where N_m is the radiance of the detector module. The radiance N_s is the actual radiance measured within the spectral limits of the filter (4.5 μm to 50 μm). The calibration coefficients, obtained from inflight calibrations on 3 July, are as follows:

<u>Ch</u>	<u>a_0</u>	<u>a_1</u>
19	-0.82	0.09583
20	-0.60	0.10535
21	-1.26	0.10168
22	-0.29	0.10338

The deviations of these calibration coefficients as derived from inflight calibrations from 29 July to 20 August are shown in Table 6-6a. The only change which indicates a need for updating the calibration coefficients is the change in the intercept of channel 20.

Periodic checks of the electronic gains of channels 1 through 14 have shown that the electronic gains have remained within 0.5 percent of the prelaunch values, with few exceptions. Table 6-6a shows the percentage of maximum deviation in the gain ratios (current/prelaunch) for the three steps in the calibration staircase voltage. The 6.5 percent change in the high-level gain of channel 2 and the gain changes in channels 6, 7, and 8 are believed to be caused by radio-frequency interference with the electronic calibration circuit and is neither a real change in the electronic gain nor nonlinearities of the channels.

Table 5-7

This table is part of the new Section 6. 5a "Post-launch Calibration"
to be added to the ERB section of the User's Guide

Table 6-6a

Stability of Calibration of the
ERB Longwave Scanning Channels
(between 29 July and 20 August 1975)

	Channel 19		Channel 20		Channel 21		Channel 22	
Date	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1
7/29	-0.07	-0.4	1.12	0.5	-0.07	-0.4	0.36	-0.3
8/5	0.50	-0.3	1.22	0.1	0.08	-0.3	0.11	-0.2
8/8	0.68	-0.4	1.33	0.1	0.04	-0.2	-0.003	-0.1
8/12	-0.06	-0.2	0.74	-0.4	-0.09	-0.3	0.17	-0.2
8/17	0.69	-0.3	1.49	0.2	0.20	-0.3	0.16	-0.2
8/20	-0.22	-0.3	1.53	0.2	0.04	-0.2	0.13	-0.4

Δa_o = change in intercept ($w m^{-2} sr^{-1}$)

$$= (a_o)_{\text{current}} - (a_o)_{7/3/75}$$

Δa_1 = change in slope ($\% w m^{-2} sr^{-1} ct^{-1}$)

$$= \frac{[(a_1)_{\text{current}} - (a_1)_{7/3/75}]}{(a_1)_{7/3/75}} \times 100$$

Table 5-8

This table is part of the new Section 6.5a "Post-launch Calibration"
to be added to the ERB section of the User's Guide

Table 6-6b

Percentage Change of the Maximum Deviation in the Gain
Ratio between Post-launch and Prelaunch Gains Values for
ERB channels 1 through 14 (20 June and 17 August 1975)

Ch	G ₀₋₃₉	G ₃₀₋₆₀	G ₆₀₋₉₀
1	-0.2	0.2	-0.1
2	0.1	-0.3	-6.5
3	±0.1	-0.1	-0.2
4	±0.1	-0.2	-0.1
5	±0.1	-0.2	0.2
6	2.6	1.8	-2.1
7	1.3	2.1	-0.6
8	1.6	1.3	-0.9
9	0.4	-0.6	±0.1
10	0.7	-0.5	±0.2
11	-0.4	0.3	0.4
12	0.2	-0.2	0.4
13	-0.3	0.2	0.3
14	+0.2	-0.1	0.3

Table 6-7, the ERB Compacted Archival Tape Format, on pages 136 through 139 of the User's Guide, should be changed as follows:

Directory Record (Page 136)

Delete last line of section A which reads:

"135-340	Zero fill	1"
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and add the following:

135-149	Orbital Elements	
135	Day of Epoch	1
136	Year of Epoch	1
137	Hours	1
138	Minutes (including fraction)	100
139	Eccentricity	10 ⁵
140	Argument of Perigee (integer part)	1
141	Argument of Perigee (fraction part)	10 ³
142	Right Ascension (integer part)	1
143	Right Ascension (fraction part)	10 ³
144	Inclination (integer part)	1
145	Inclination (fraction part)	10 ³
146	Semimajor Axis (km, integer part)	1
147	Semimajor Axis (km, fraction part)	10 ³
148	Mean Anomaly (integer part)	1
149	Mean Anomaly (fraction part)	10 ³
150	Sun-Earth Distance (A. U.)	10 ⁴
151-340	Zero fill	1

Orbital Summary Record (Page 139)

Delete last line of table, which reads:

17-340	Zero fill	1"
--------	-----------	----

and add the following:

17-26	Solar Irradiances (Chs. 1-10)	Chs. 1-5:10
	Normalized to mean sun-earth distance	Chs. 6-10:100
27	Solar Channels\Assembly Gamma Angle (positive to right of track)	1
28-340	Zero fill	1

5.6 LRIR Corrections to the User's Guide

Table 5-9

Post-launch analysis of relative spectral response data and orbital data leads to the following corrected values for Table 7-2, on page 154 of the User's Guide.

Table 7-2

Optical Characteristics of LRIR Channels

Channel		Band Pass (50% Peak Response)	Field-of-view (km)		Random noise in orbit* $\pm 1 \sigma$ (watts/m ² -sr)
No.	Abbrev.		Vertical	Horizontal	
1	NCO ₂	649-672 cm ⁻¹ (14.9-15.4 μ m)	2.0	20	0.0023
2	BCO ₂	592-700 cm ⁻¹ (14.3-16.9 μ m)	2.0	20	0.0040
3	O ₃	984-1169 cm ⁻¹ (8.6-10.2 μ m)	2.0	20	0.011
4	H ₂ O	412-446 cm ⁻¹ (22.4-24.3 μ m)	2.5	25	0.008

*Noise will gradually increase as the detector temperature increases during the useful life of the experiment.

5.7 PMR Corrections to the User's Guide

There are no PMR corrections to the User's Guide.

5.8 TWERLE Corrections to the User's Guide

Table 5-10

The following are address changes to Table 9-2
on page 186 in the User's Guide.

Table 9-2

Nimbus RAMS Experiments - Address Changes

Address Changes

<u>OLD</u>	<u>NEW</u>
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Professor Pierre Lacombe, Director Laboratory d'Océanographic Muséum Histoire Naturelle de Paris 43 Rue Cuvier Paris, France	Professor Pierre Lacombe, Director Laboratoire d'Océanographie Physique Muséum National d'Histoire Naturelle 43-45 Rue Cuvier 75005 Paris, France
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Table 9-2 (Continued)

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Table 9-2 (Concluded)

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H. Stommel Professor of Oceanography MIT Cambridge, Massachusetts	Professor Henry Stommel Department of Meteorology Room 54-1416 Massachusetts Institute of Technology Cambridge, Massachusetts 02139
B. Buck Polar Research Lab. Santa Barbara California 93101	Mr. B. M. Buck, President Polar Research Laboratory, Inc. 123 Santa Barbara Street Santa Barbara, California 93101
John A. Knauss Graduate School of Ocean- ography University of Rhode Island Kingston, Rhode Island 02881	Dr. P. L. Richardson Woods Hole Ocean Institute Woods Hole, Massachusetts 02543

5.9 T&DRE Corrections to the User's Guide

There are no T&DRE corrections to the User's Guide.

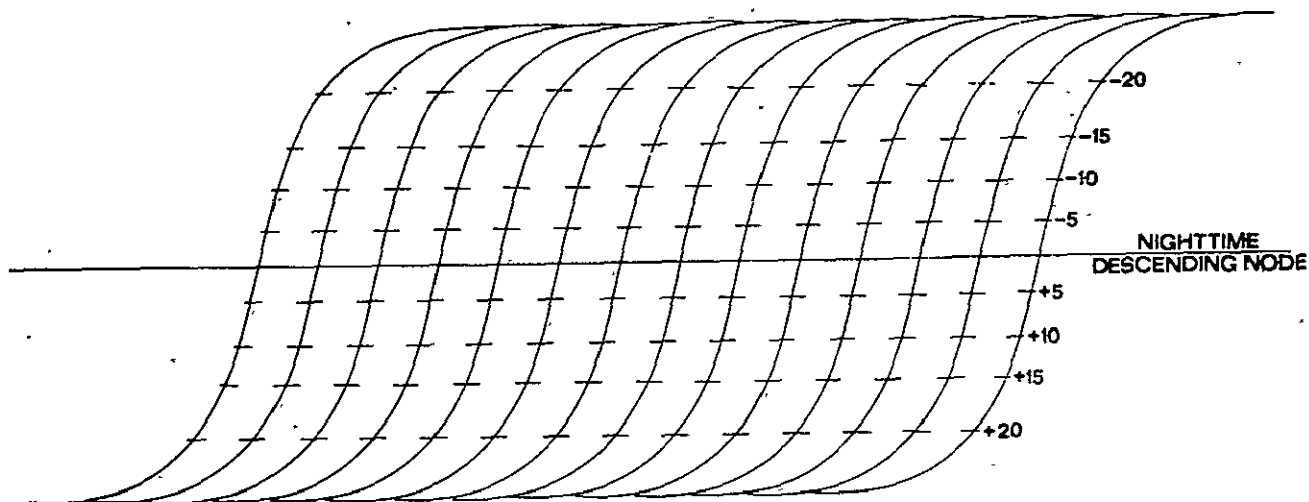
Table 5-11

The following are new TWERLE users, added since launch.

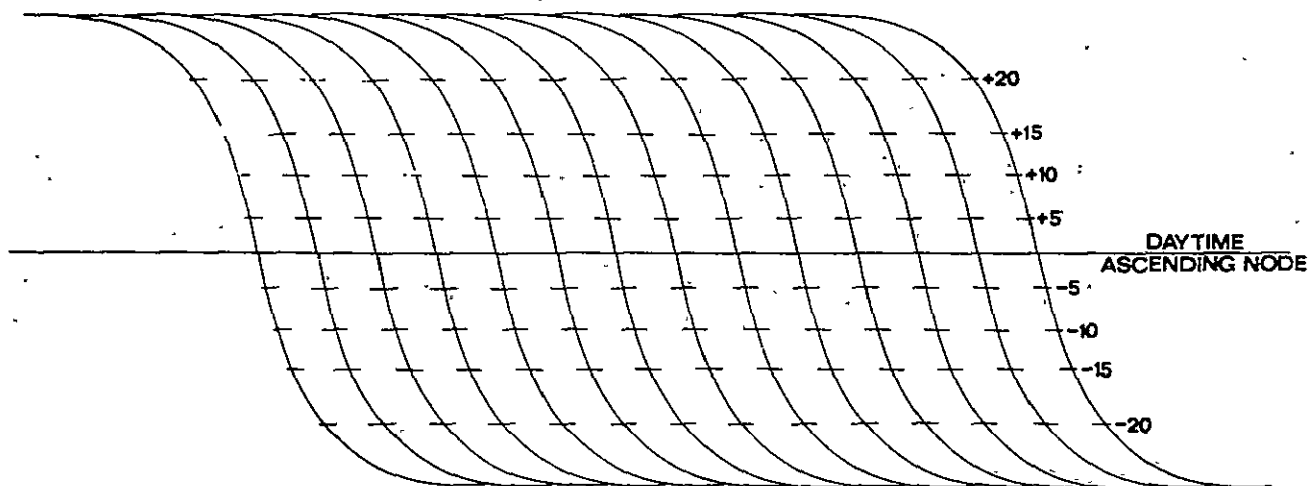
This information should be added to Table 9-2

(Nimbus RAMS Experiments) on page 186 in the User's Guide.

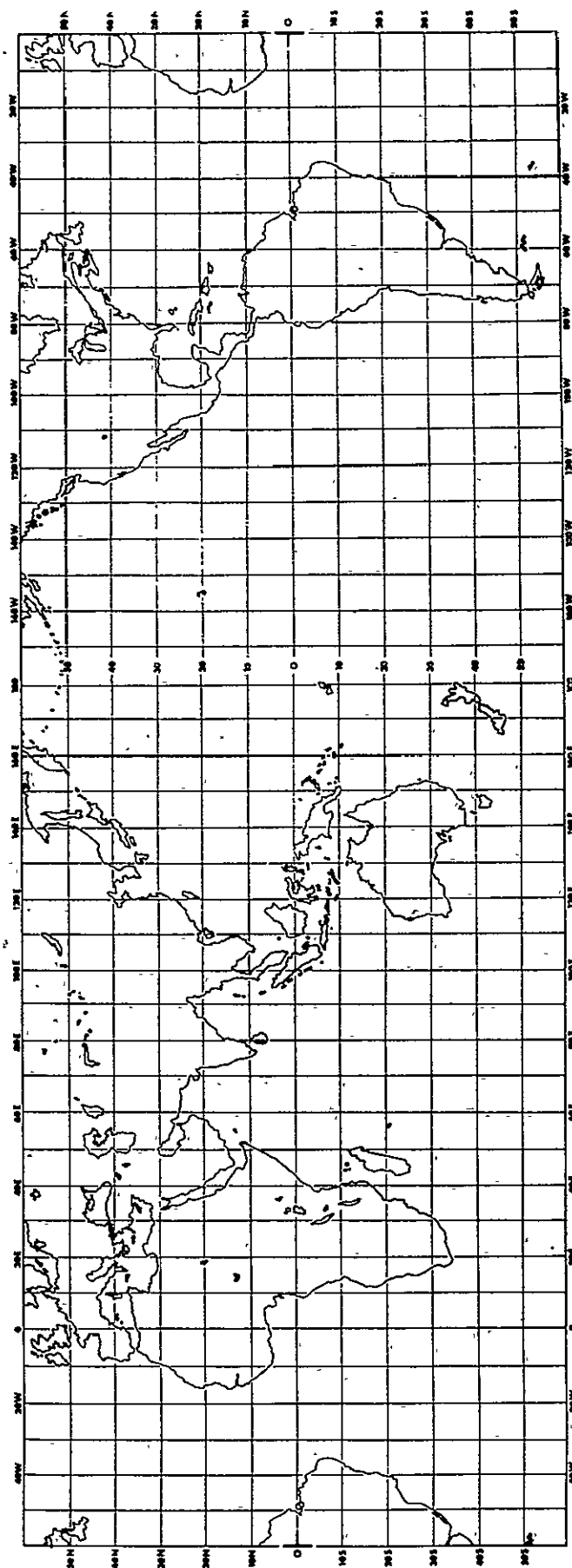
Principal Investigator	Experiment Title	Platform		
		Number	Type	Deployment Area
Dr. A. D. Kirwan, Jr. Department of Oceanography College of Geosciences Texas A & M University College Station, Texas 77843	Anomaly Dynamics Study (ADS)	32	Drifting Buoys	North Pacific
Mr. David F. Thomas, Jr. SATD-MEB-SDS, Mail Stop 322 NASA Langley Research Center Hampton, Virginia 23665	Air-droppable In Situ Platforms for Long Duration Measurements near Hurricanes	10	Ocean Platforms	Western Atlantic near North America
Dr. P. Roger Williamson Department of Applied Physics & Information Science University of California — San Diego LaJolla, California 92037	Stratospheric Monitoring with Longterm Balloon Flights	3	Super-pressure Balloons	Southern Hemisphere
Mr. J. C. O'Rourke Canadian Marine Drilling Ltd. P.O. Box 200 Calgary, Canada T2P 2H8	Arctic Ice Dynamics	2-4	Sea Ice Platforms	Beaufort Sea
Dr. J. Michael Hall NOAA Data Buoy Office National Space Tech Office Bay St. Louis, Mississippi 39520	East Coast Drifting Experiment	24	Drifting Buoys	Atlantic Ocean
	High Impact Detection and Determination on Large Buoys	10	Buoy	Atlantic Ocean, Gulf of Mexico, & North Pacific Ocean
	Reliability Enhancement Experiment	3	Buoy	Santa Barbara, California & Arctic Ocean



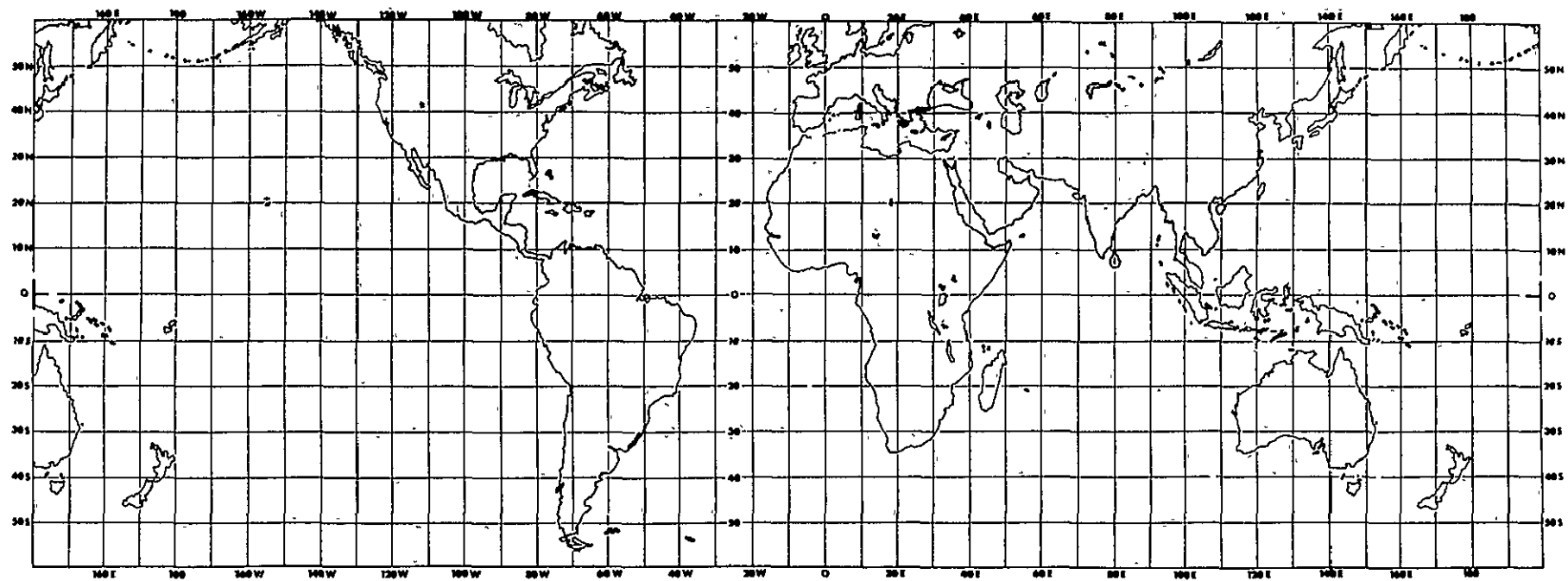
NIMBUS SUBSATELLITE TRACKS OVERLAY



NIMBUS SUBSATELLITE TRACKS OVERLAY



Location Guide
Average Scale for Nimbus
THIR Nighttime Montages



Location Guide
Average Scale for Nimbus
THIR Daytime Montages